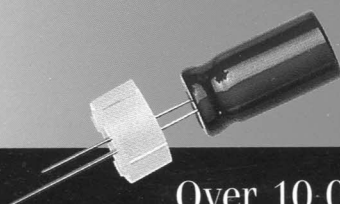
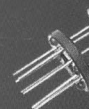
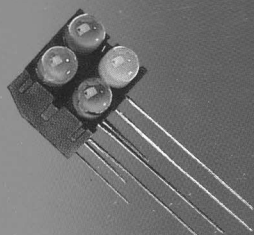
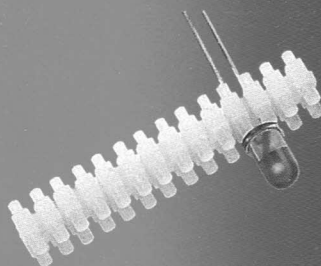
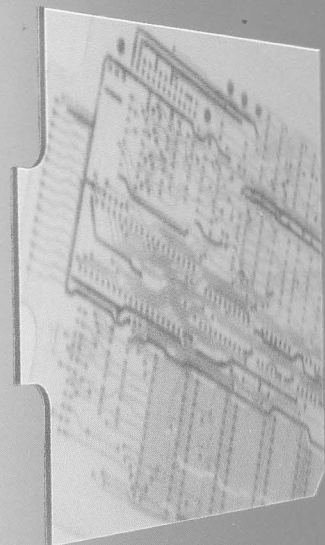
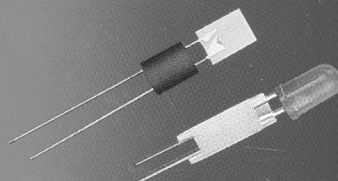
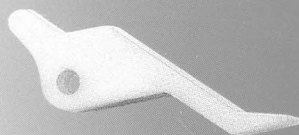


# Electronic Assembly Hardware

# Bivar



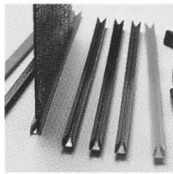
Over 10,000 Unique Problem Solvers  
Making The Assembly & Packaging  
Of Board-Level Technologies  
Possible, Practical & Economical.



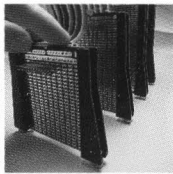
Snap-In Card Guides  
Flame Retardant Guides  
Deep Channel Guides  
PCMCIA Card Guides  
Vertical Card Guides  
Interchangeable Guides  
Circular Card Guides  
Narrow Card Guides  
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Inserters & Extractors  
Card Ejectors & Handles  
PCB Retainers  
Connector Cutout Covers  
Extruded LED Mounts  
Rectangular LED Mounts  
Individual T-1 3/4 LED Mounts  
Individual T-1 LED Mounts  
Individual T-1 & T-1 3/4 LED Mounts  
LED Strip Mounts  
Molded LED Mounts  
Individual LED Holders  
Panel Clips & Rings  
SIP & DIP Mounts  
Discrete Capacitor Mounts  
Vertical Component Mounts  
Universal TO-5, TO-18 & T-1 3/4 LED Mounts  
TO-18 Mounts, TO-18 Spreaders  
TO-5 & IC Mounts  
IC Mounts & Spreaders  
Power Transistor Mounts  
Electrolytic Capacitor Mounts  
Universal Discrete Spacers  
Crystal Mounts & Insulators  
PCB Hole Plugs  
Standard Nylon Screw Spacers  
Self-Retaining Screw Spacers  
General Purpose, Axial & Universal Wash-Away Spacers  
Rectangular & Square Wash-Away Spacers

CID A-A55485 &  
MIL-M-38527 Products

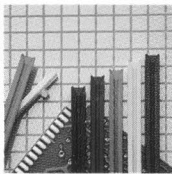
# Over 10,000 Products Immediately



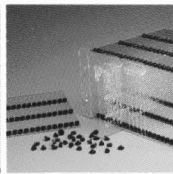
Snap-In, Flame Retardant and Deep Channel Card Guides



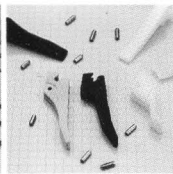
Vertical Card Guides



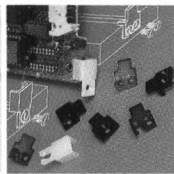
Interchangeable Card Guides



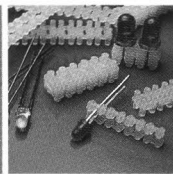
Circular Card Guides



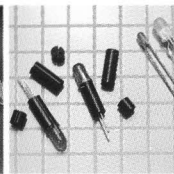
Card Ejectors, Inserters/Extractors & Handles



PCB Card Retainers



12- and 15-Station LED Strip Mounts



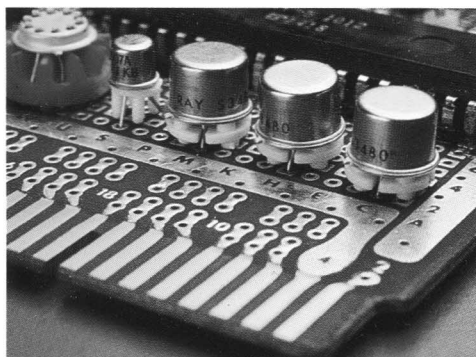
Self-Retaining Extruded LED Mounts for T-1, T-1 3/4 and T-1 3/4 (3 lead)

## Unique Problem Solvers That Uniformly Position, Elevate, Protect and Improve Printed Circuit Board Assembly & Packaging.

Keeping pace with the advancing methods of electronic packaging and assembly, including practical solutions for challenging board-level technologies such as IC cards, lighted display arrays and smaller components, Bivar continues to lead the industry in the provision of low-cost products that assure precise component alignment, accurate elevation and consistent uniformity. With their use, you will experience lower assembly costs, reduced rework and rejects, and greater control of assembly and quality processes.

Like the products before them, dozens of new products in this all-new catalog have been designed by working closely with customer engineering, designers, manufacturing and production, quality assurance and purchasing, to assure the true value, selection and availability of any Bivar product. Many new designs are the result of early discussions where, through prior experience, the customer has an appreciation of Bivar's response and capabilities. Such early sharing often leads to significant cost-savings and faster realization in bringing new products to market.

Selecting Bivar is the answer to immediate availability worldwide. And, your assurance of quality, service and responsiveness will be realized the first time you call any of Bivar's authorized distributors or representatives.



Permanent mounts and spacers protect fragile leads during assembly and assure accurate elevation, with many styles serving as lead-forming fixtures.

Printed circuit board card guides, ejectors, inserter/extractors, handles and PCB retainers.

Low-cost, single- and bi-level 90° LED Holders in individual stations or interlocking, rigid arrays.

Electrolytic Capacitor Mounts

### BUILT TO RIGID STANDARDS

All Bivar products are precision manufactured to exacting specifications and made from the finest materials available, including many rated 94V-0 or 94V-2 by U.L. Bivar also offers one of industry's largest selections of standard products that meet the latest revisions of MIL-M-38527 and CID A-A55485.

### DESIGNED TO SAVE MONEY

Bivar's component mounts, spacers, and PCB packaging products solve many assembly problems by minimizing rework or replacement, and by providing lower cost alternatives to traditional designs. Several Bivar products allow use of fewer actual products or serve multiple purposes, reducing the need for otherwise large inventories.

### COMPLETE SPECIFICATIONS, PRICING & CROSS-REFERENCE

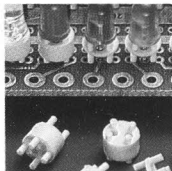
Every product in this catalog is presented in complete detail including dimensioned drawings (standard and metric), part numbers, MIL-Spec or CID references, material specifications and tolerances. For your convenience, a price list is provided with this catalog, and you will find a concise Cross Reference to popular industry standard or discontinued manufacturer's products on page 5.

# Bivar

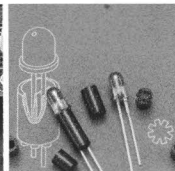
BIVAR, INC. 4 THOMAS • IRVINE, CALIFORNIA 92718  
CAGE CODE (FSCM) 32559 © 1994 BIVAR, INC.



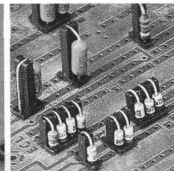
# Available Worldwide.



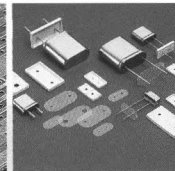
Individual T-1 and T-1 3/4 LED Mounts



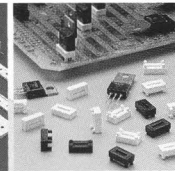
Self-Retaining Molded LED Mounts



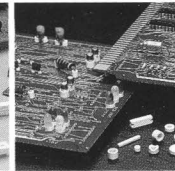
Vertical Component Mounts



Crystal Mounts & Insulators



Power Transistor Mounts



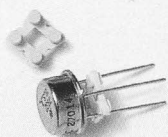
Wash-Away Spacers

*Bivar's low-cost wash-away spacers make inspections faster and easier. They improve air circulation and allow maximum cleaning, dissolving after assembly in hot or warm running water without a trace of residue. Ideal for reduced rejections and rework.*

*Self-retaining tubular and extruded LED mounts.*

## Putting Board-Level Technologies On Board.

Today's newer packaging designs, including portable and hand-held instruments or personal computing products require practical, low-cost solutions. Bivar's answer to this new era of board-level technologies are PCMCIA card guides, thermally protective crystal insulators, universal mounts for several industry standard components and discrete devices, and a host of uniquely designed products immediately available from stock.



Universal mounting pads for TO-5, TO-18 and T-1 3/4 LEDs.



Horizontal card guides for PCMCIA memory, fax/modem (I/O) and IC cards.

Crystal mounts and insulators.

**(714) 951-8808 FAX (714) 951-3974**

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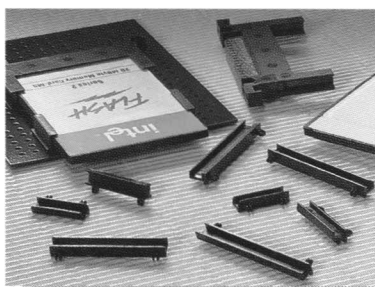
## Fast-Find ✓ Product Guide

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\*Self-Retaining

# Designed To Answer Today's

## Horizontal PCMCIA IC Card Guides



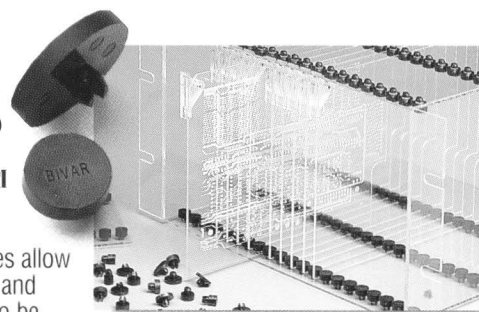
Bivar's HG Series Horizontal IC Card Guides provide a new, highly versatile yet low-cost answer to the increasing need to more effectively receive PCMCIA Type I and Type II cards in compact products. Rigidly designed to precision tolerances, they smoothly guide IC cards into connectors, while enabling closer positioning behind card slots, reducing dependence of the card entry slot to serve as a guide, and a simple alternative to cumbersome extensions or brackets. Available in eight styles and sizes. *See page 13.*

### INDUSTRY'S MOST COMPLETE SELECTION OF CARD GUIDES, EJECTORS, INSERTER/EXTRACTORS AND HANDLES.

Unmatched by any other supplier, Bivar's complete selection of PCB card guides, ejectors, inserters/extractors, handles and board retainers offers simple, yet effective answers to thousands of PCB packaging needs. Each design costs only pennies apiece, yet offers the added values of easy installation, versatility and reliability. *See pages 10-24.*

### CIRCULAR CARD GUIDES ALLOW COOLER SYSTEM OPERATION

CIRC-O-GIDE™ snap-in card guides allow unlimited spacing and PCB thicknesses to be effectively packaged as an alternative to conventional card guides. They allow added space for cooling slots in card cages and air circulation where heat between boards is a continuing concern. *See pages 18-19.*



Innovative Solutions  
To Problems That Are  
As Real Today As They  
Were Nearly Three Decades  
Ago. And, Some We Never  
Knew Would Exist.

Nearly 30 Years...BIVAR.

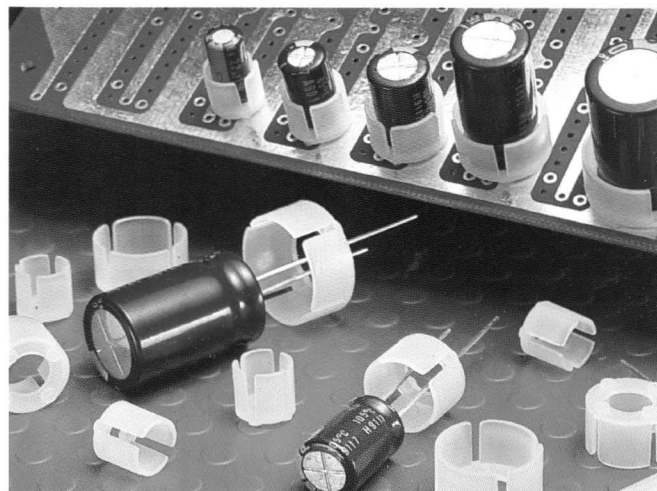
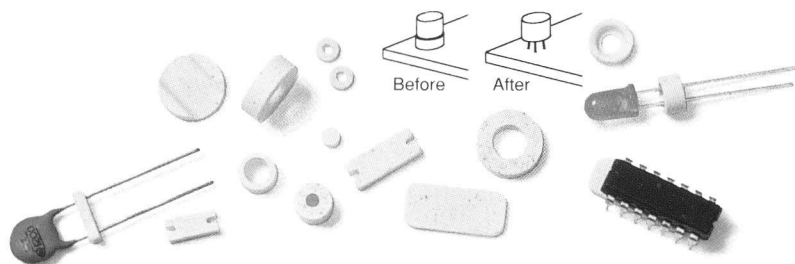
### ELECTROLYTIC CAPACITOR MOUNTS PROTECT CIRCUITRY & DEVICES.

Bivar's ECM Series of permanent mounts insulates and isolates electrolytic capacitors in high-density applications such as power supplies. A unique slotted cup design provides high side walls to protect and insulate the device from surrounding components and circuitry. The mounts make inspection easier and provide proper cleaning while protecting devices from shock, vibration and accidental lead bending during handling. *See page 55.*



### WASH-AWAY MOUNTS & SPACERS REDUCE REWORK

DISS-O-PAD® Wash-Away Mounts and Spacers disappear in warm running water without a trace of residue, accurately and uniformly elevating, protecting leads and positioning board-level components on PCBs during assembly. Over 500 sizes in 96 different styles and elevations. *See pages 64-65.*



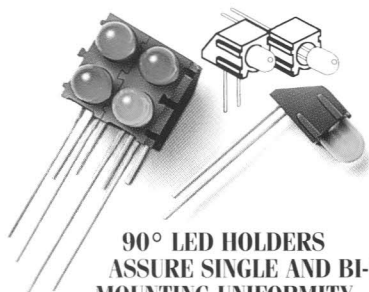
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# Most Challenging Problems.

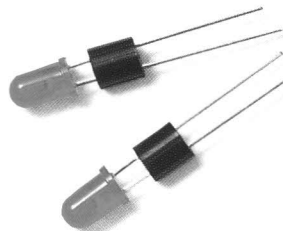
## Self-Retaining Extruded LED Mounts Are Tape Mountable For Auto-Insertion.

Bivar's low-cost, self-retaining extruded LED mounts are available in four distinct styles to accept T-1, T-1 3/4 and T-1 3/4 (3-lead) LEDs. They facilitate easy assembly without tools while being firmly retained on LED leads during handling and assembly steps. These ELM Series mounts are virtually the same diameter as the LED, making them ideal for automatic insertion and precise mounting. See pages 28-30.



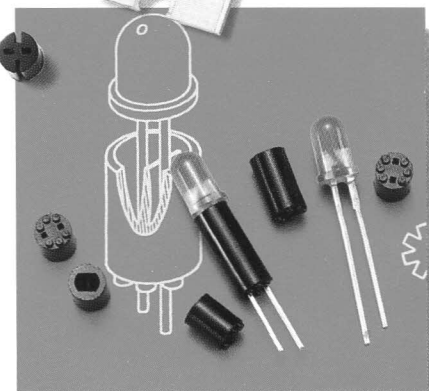
**90° LED HOLDERS  
ASSURE SINGLE AND BI-LEVEL  
MOUNTING UNIFORMITY**

Combine any color, intensity or style of LEDs with assured uniformity of single or bi-level displays. Interlocking design forms rigid arrays or may be used as individual stations. 52 versatile styles accept standard or flangeless T-1 and T-1 3/4 or rectangular LEDs. See pages 36-41.



**SELF-RETAINING TUBULAR MOUNTS  
UNIVERSALLY ACCEPT T-1 & T-1 3/4  
LEDS, PROTECTS LEADS FROM  
SHORTING**

Rigidly molded and self-retaining, these LTM Series tubular LED mounts are ideal for alignment-critical displays. Single universal style accepts and stays retained on leads of both T-1 and T-1 3/4 LEDs for easier manual handling or tape mounting for automatic insertion. See page 34.



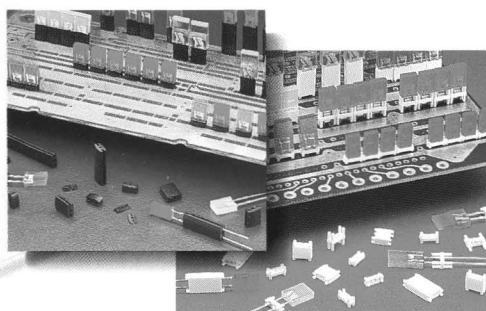
**UNIVERSAL TO-5, TO-18 & T-1 3/4 LED MOUNTS REDUCE  
INVENTORY REQUIREMENTS**

An ideal solution for reduction of inventory and multi-purpose use, these precision molded mounts are available in 22 elevations from .030" through .240", featuring standoffs on both top and bottom for added air-circulation, easy cleaning of fluxes and residue. See page 49.



**PCB HOLE PLUGS  
PREVENT SOLDER  
FROM REACHING TOP  
SURFACES**

PLUG-O-HOLE™ PCB Hole Plugs prevent solder from flowing through unused holes during wave, dip or hand soldering. Reusable and non-contaminating to solder, these low-cost plugs are tapered for a snug fit, yet are simple to remove. See page 59.



**SELF-RETAINING MOUNTS ACCEPT  
2- & 3-LEAD RECTANGULAR LEADS**

Available in both precision molded and extruded styles in 73 elevations, Bivar's RL and ERM Series Rectangular LED Mounts assure accurate and uniform mounting while protecting both LED and leads during assembly and handling. Self-retaining design keeps mount securely in-place on leads. Ideal for pre-assembly and automatic insertion. See pages 28 & 30.

**New, Low-Cost Products That Save Money.**

# Permanent Mounts & Spacers For Added Protection

MIL-M-38527 & CID A-A 55485

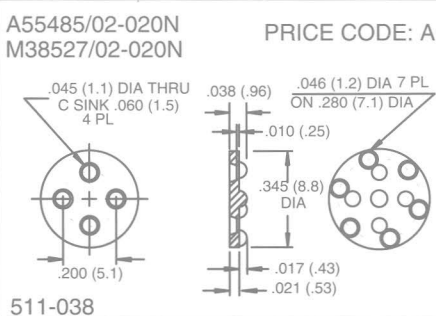
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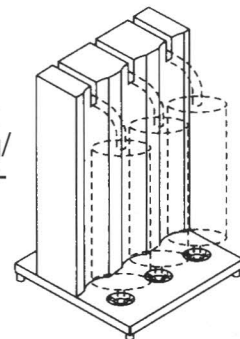
## Over 3,000 Styles and Sizes Protect Components From Shock, Vibration, Heat & Stress.

You can safely select from industry's most complete selection of permanent mounts and spacers designed and manufactured to Bivar's traditional standards of quality and per the latest revisions of MIL-M-38527/01 & CID A-A55485/01 through /11. These cost-effective packaging and assembly solutions protect transistors, ICs, resistors, LEDs, diodes, capacitors and additional discrete components during assembly and operational use, protecting these devices from shock, vibration, heat and other stresses which can cause damage and costly replacement.



Most of these low-cost styles facilitate inspection in simplicity and time, improve air circulation beneath components, and allow maximum cleaning. Use of these products substantially reduces scrap and rework.

All styles and sizes are stocked for immediate shipment. Simply select the specification drawing/part number you seek in the column to the left for easy-to-find detailed outline drawings and information throughout the pages of this catalog. Contact your nearest authorized Bivar distributor or representative, or our factory offices for further assistance or special requirements.





## CROSS REFERENCE

| MILTON ROSS | BIVAR    | PRICE CODE | MILTON ROSS        | BIVAR        | PRICE CODE        | THERM-ALLOY | BIVAR    | PRICE CODE | SCANBE             | BIVAR        |
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BIVAR numbers without an asterick following are totally interchangeable; numbers with an asterick (\*) are BIVAR's closest equivalents.

Comparison with Data Sheets and Samples is strongly recommended. Samples are available upon request.

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| 922 SERIES     | C             | 41         | CR-300         | *             | 43         | SSD-800        | *             | 17         | Individ T-1, T-1 3/4 LED Mounts 32                                   |
| 923 SERIES     | C             | 41         | DC SERIES      | *             | 12         | SRS SERIES     | ***           | 61         | LED Strip Mounts 33  |
| 937 SERIES     | ***           | 56-57      | ECM SERIES     | ***           | 55         | T-100-060 thru |               |            | Molded LED Mounts * 34   |
| 938 SERIES     | ***           | 56-57      | ELM SERIES     | ***           | 28-29      | T-100-210      | D             | 33         | <b>LED Holders</b> 35  |
| 939 SERIES     | ***           | 56-57      | ERM SERIES     | ***           | 28-29      | T-101-200 thru |               |            | Individual LED Holders * 36,37,38,39,40&41                           |
| 940 SERIES     | ***           | 56-57      | E-200 thru     |               |            | T-101-350      | D             | 33         | Panel Clips & Rings * 42&43  |
| 941 SERIES     | ***           | 56-57      | E-1400         | *             | 10         | T-175-060 thru |               |            | <b>Introduction, Materials &amp; Specification Information</b> 44&45 |
| 999 SERIES     | B             | 37         | FR-200 thru    |               |            | T-175-210      | D             | 33         | SIP & DIP Mounts 46  |
| 1000-078       | K             | 19         | FR-1400        | *             | 11         | T-176-200 thru |               |            | Discrete Capacitor Mounts 47   |
| 1000-109       | K             | 19         | H-100C,-1      | C             | 36         | T-176-350      | D             | 33         | Vertical Component Mounts 48   |
| 1000-125       | K             | 19         | H-101C,-1      | C             | 36         | TO-5-XX thru   |               |            | Universal TO-5, TO-18 & TO-1 3/4 LED Mounts 49                       |
| 1000-156       | K             | 19         | H-102C,-1      | C             | 36         | TO-68-XX       | *             | 64         | TO-18 Mounts, TO-18 Spreaders 50&51                                  |
| 1000-187       | K             | 19         | H-103C,-1      | C             | 36         | TO-100-XX thru |               |            | TO-5 & IC Mounts 52&53   |
| 1001 SERIES    | *             | 22         | H-120          | C             | 36         | TO-207-XX      | *             | 65         | IC Mounts & Spreaders 54   |
| 1002 SERIES    | *             | 22         | H-175          | E             | 38         | VG1 SERIES     | *             | 15         | Power Transistor Mounts 55   |
| 1003 SERIES    | *             | 22         | H-175C,-1      | I             | 38         | VG2 SERIES     | *             | 15         | Electrolytic Capacitor Mounts 55                                     |
| 1107 SERIES    | *             | 22         | H-176C,-1      | I             | 38         | VG3 SERIES     | *             | 15         | Universal Discrete Spacers 56&57                                     |
| 1209 SERIES    | *             | 22         | H-177C,-1      | I             | 38         |                |               |            | Crystal Mounts & Insulators 58                                       |
| 3121-004       | B             | 48         | H-178C,-1      | I             | 38         |                |               |            | <b>Manufacturing &amp; Assembly Products</b> 59-61                   |
| 3122-010       | G             | 48         | H-200C,-1      | D             | 37         |                |               |            | PCB Hole Plugs 59  |
| 3123-016       | I             | 48         | H-201C,-1      | D             | 37         |                |               |            | Stand Nylon Screw Spacers 60   |
| 3124-022       | J             | 48         | H-202C,-1      | D             | 37         |                |               |            | Self-Retaining Screw Spacers 61                                      |
| 4371-005       | F             | 48         | H-203C,-1      | D             | 37         |                |               |            | <b>Wash-Away Spacer Intro.</b> 62&63                                 |
| 4372-011       | H             | 48         | H-275C,-1      | D             | 39         |                |               |            | General Purpose, Axial & Universal Spacers 64                        |
| 4373-017       | I             | 48         | H-276C,-1      | D             | 39         |                |               |            | Rectangular, Square Spacers 65                                       |
| 4374-023       | J             | 48         | H-277C,-1      | D             | 39         |                |               |            | * Self-Retaining   |
| 5621-006       | G             | 48         | H-278C,-1      | D             | 39         |                |               |            |  |
| 5622-012       | I             | 48         | H-1RV          | D             | 40         |                |               |            |  |
| 5623-018       | J             | 48         | H-2RV          | D             | 40         |                |               |            |  |
| 5624-024       | K             | 48         | H-3RV          | D             | 40         |                |               |            |  |
|                |               |            | H-3RV-C        | E             | 40         |                |               |            |  |

# Printed Circuit Board Packaging Products. Unequaled Selection.

Offering simple yet effective answers to a diversity of PCB card packaging needs, Bivar's family of PCB card guides, ejectors, inserter/extractors and handles remain a favorite for thousands of uses.

Building on the original ECONO-O-GIDE®, TEMP-O-GIDE™, and GRIP-O-GIDE™ tradition of card guides, Bivar has added versatile space-saving products like their VERT-O-GIDE™, Vertical Card Guides. Or, for even greater flexibility in choosing your own spacing and board length combinations, Bivar's CIRC-O-GIDE™, Circular Card Guides present added economies of reduced inventory requirements and added air-circulation in tight board-space applications.



## Low-Cost Answers

Only pennies apiece, each design offers the added value of easy installation, versatile use, and assured reliability under virtually any set of demanding requirements.

COMP-O-GIDES, for example, provide total interchangeability with competitive styles where availability could otherwise be a problem.

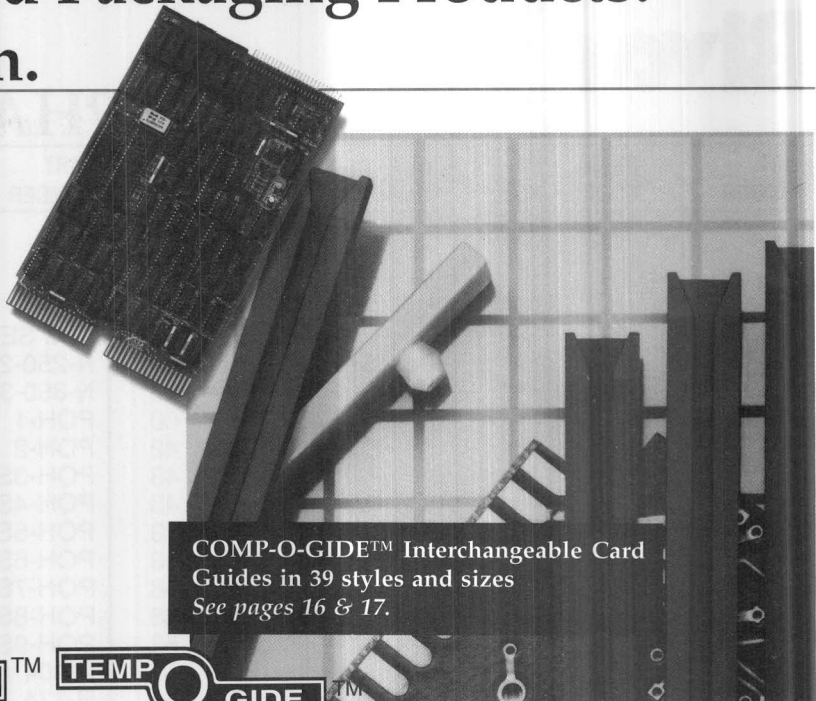
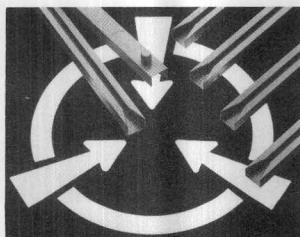
## Available From Stock

A key reason for the popularity of Bivar products worldwide. Because Bivar's commitment to immediate availability of all standard products means fewer problems for you. Today, an international network of authorized Bivar distributors stocks most Bivar products, and can respond with most needs instantly. Of course, Bivar insists on maintaining in-depth inventories of all products at its factory. It's part of a total commitment to customer service.

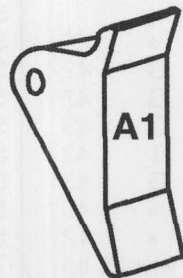
## Narrow & Anti-Static Card Guides

ESD and high-density applications can rest assured of solutions for PCB packaging, with Bivar's NARR-O-GIDE™ and STAT-O-GIDE™ Snap-In Card Guides.

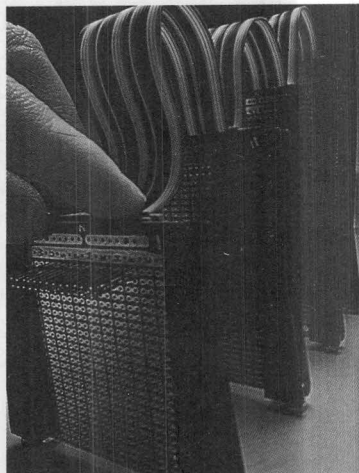
For added value, entry ramps at both ends of the guides enable in-line use for large PCBs. Because of their thin profile, both guides allow maximum board densities, while allowing opportunities for greater air flow.  
*See page 20.*



COMP-O-GIDE™ Interchangeable Card Guides in 39 styles and sizes  
*See pages 16 & 17.*

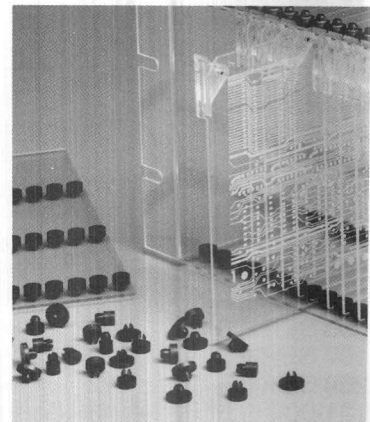


## Industry's Most Complete Selection Of Quality Card Guides



**Vert-O-Gide™** Vertical Card Guides offer 3 distinct mounting styles, including connector mounting, paired or tandem mounting designs for mounting 1/16", 3/32", & 1/8" PCBs.

*See pages 14 & 15.*



### Circ-O-Gide™

Circular Card Guides provide answers to card guide inventory, spacing and costs. 35 thicknesses and diameter combinations open the way to virtually unlimited PCB packaging ideas.

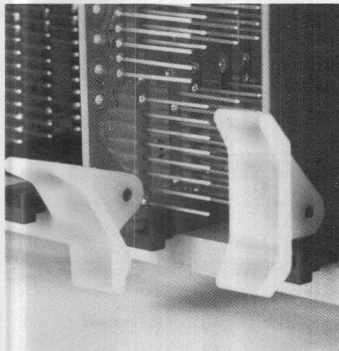
*See pages 18 & 19.*

## Easy-To-Install Card Ejectors, Handles, Inserters & Extractors

Correctly installing, retaining, identifying or removing PCBs is exactly how Bivar's family of CARD-O-PULL™ Card Ejectors, Inserter/Extractors and PCB Handles take care of the job. One of industry's largest selections of styles, colors and marking options provide economical solutions to board packaging needs, while answering the designer's need for secure, quality packaging and color-coding and identification.

Bivar has answered many specific needs with these designs, while also providing styles that are interchangeable with competitive products. This further assures product availability, and provides customer confidence, knowing that Bivar's traditional quality is inherent in each product.

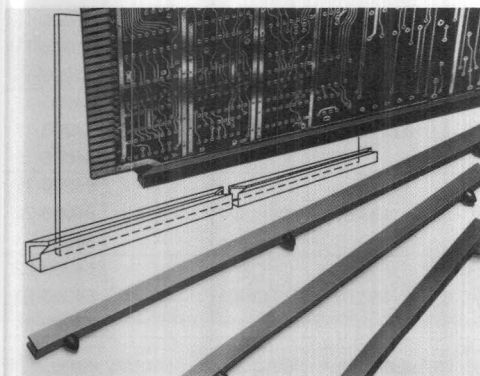
Bivar's ejectors, inserter/extractors and handles accept 1/16", 3/32" and 1/8" printed circuit boards, answering industry's largest use requirements. And all standard products are inventoried in depth for immediate shipment anywhere.



**CARD-O-PULL™** Card Ejectors assure firm retention in card cages or enclosures, provide versatile styles for specific needs. See page 23.



**Inserter/Extractors** provide optimum leverage for ease of installation and removal of PCBs. See page 22.



**GRIP-O-GIDE™** Deep Channel Card Guides assure maximum board retention for wide boards and high vibration and shock applications. Double ended entry ramps allow in-line use for the largest boards. See page 12.

## U.L. Rated Materials

The entire family of Bivar PCB packaging products in this section are made of finest grade materials, capable of withstanding the most demanding requirements. Each product is made from natural Nylon per ASTM D4066 PA111, with a material rating of 94V-0 or 94V-2 by U.L.

**94V-0**

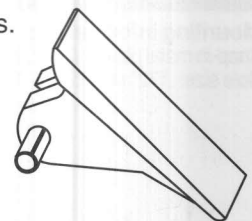
U.L. RATED MATERIAL

**94V-2**

U.L. RATED MATERIAL

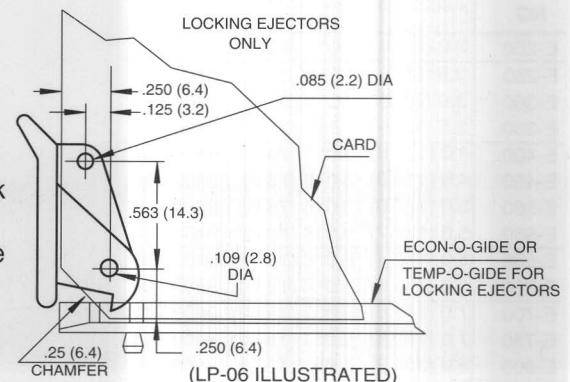
## Pre-Assembled Pins

Bivar offers PRE-ASSEMBLED spring pins in all inserter/extractors and ejectors. This significantly reduces required time and handling making installation far easier and lowering assembly costs.



## Mounting Information

Mounting information is provided with all product specifications and dimensioned drawings for all Bivar PCB packaging products to make installation easier and to assure proper operation. Below is an example from page 23, illustrating the simple steps for installing Bivar card ejectors.



**EJECTOR MOUNTING DIMENSIONS**

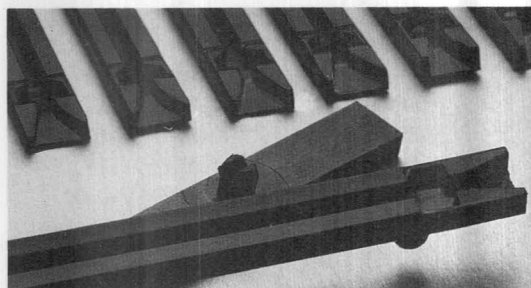


# ECON-O-GIDE®

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

## Snap-in and Flame Retardant Card Guides for 1/16" PCBs



- 25 Standard lengths from 2" through 14" in 1/2" increments
- Made from flame retardant nylon U.L. rated 94V-0 material

Rigid, strong and economical, ECON-O-GIDES are flame retardant and give you design flexibility.

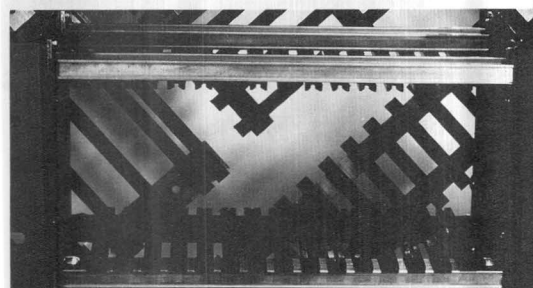
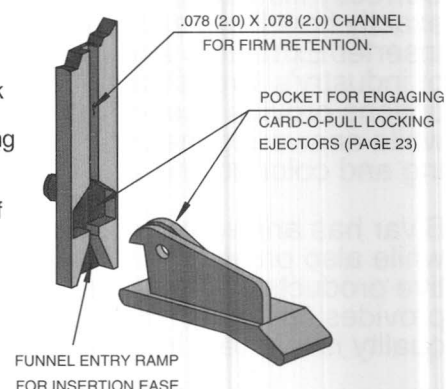
Choose from 25 standard lengths and pick your density and air circulation pattern. Place guides just where you want. Spacing options are virtually unlimited.

Guide installation is a snap into any type of sheet, plate or channel. Retention is firm, and no special tooling is required.

Card insertion is fast and easy with funneled ramps. No more insertion hang ups.

Locking ejectors can be used for positive card retention and insertion/extraction ease.

- Precision molded for rigidity, strength, natural lubricity and heat resistance.
- Available from stock.



### Mounting information:

Snap-in metal plates: .047"/.090" (1.2)/(2.3) thick  
Hole size: .172" (4.4) dia., +.003 (.08), -.001 (0.3) (11/64" drill)

### Material Specifications:

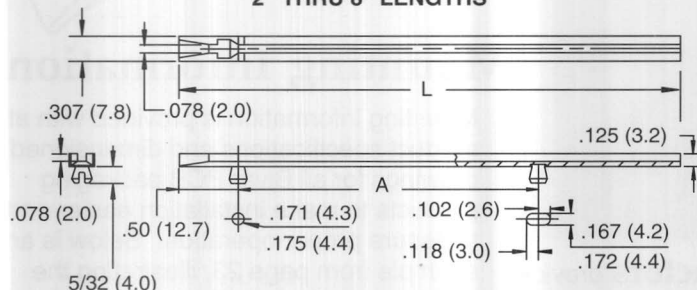
ECON-O-GIDES: Black, glass reinforced Nylon.

### Standard Drawing Tolerances,

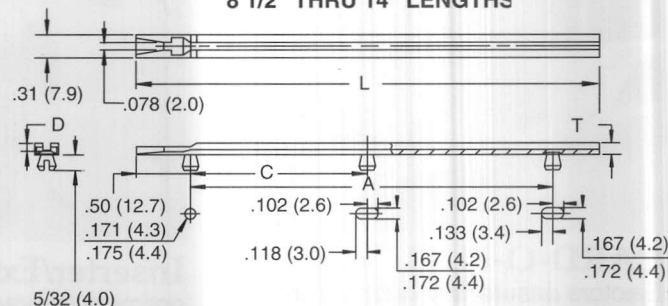
unless otherwise indicated:  
Fractions ± 1/64 (.40)  
.X ± 1/64 (.40)  
.XX ± .010 (.254)  
.XXX ± .005 (.127)



### 2" THRU 8" LENGTHS



### 8 1/2" THRU 14" LENGTHS



### 2" Thru 8" Lengths Color Black

| PART NO. | L<br>+.062 (1.6)<br>-.032 (.81) | A<br>+.016 (.41)<br>-.032 (.81) | DESC<br>Dwg. No. |
|----------|---------------------------------|---------------------------------|------------------|
| E-200    | 2.0 (50.8)                      | 1.016 (25.8)                    | ----             |
| E-250    | 2.5 (63.5)                      | 1.516 (38.5)                    | 84006-01         |
| E-300    | 3.0 (76.2)                      | 1.516 (38.5)                    | 84006-02         |
| E-350    | 3.5 (88.9)                      | 1.516 (38.5)                    | 84006-03         |
| E-400    | 4.0 (101.6)                     | 3.016 (76.6)                    | 84006-04         |
| E-450    | 4.5 (114.3)                     | 3.016 (76.6)                    | 84006-05         |
| E-500    | 5.0 (127.0)                     | 3.016 (76.6)                    | 84006-06         |
| E-550    | 5.5 (139.7)                     | 3.016 (76.6)                    | 84006-07         |
| E-600    | 6.0 (152.4)                     | 5.016 (127.4)                   | 84006-08         |
| E-650    | 6.5 (165.1)                     | 5.016 (127.4)                   | 84006-09         |
| E-700    | 7.0 (177.8)                     | 6.031 (153.2)                   | 84006-10         |
| E-750    | 7.5 (190.5)                     | 6.031 (153.2)                   | 84006-11         |
| E-800    | 8.0 (203.2)                     | 6.031 (153.2)                   | 84006-12         |

### 8 1/2" thru 14" Lengths

| PART NO. | L<br>+.062 (1.6)<br>-.047 (1.2) | A<br>+.016 (.41)<br>-.047 (1.2) | C<br>+.016 (.41)<br>-.032 (.81) | D<br>+.005 (.13)<br>-.005 (.13) | T<br>+.007 (.18)<br>-.007 (.18) | DESC<br>Dwg. No. |
|----------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------|
| E-850    | 8.5 (215.9)                     |                                 |                                 |                                 |                                 | 84006-13         |
| E-900    | 9.0 (228.6)                     | 7.531 (191.3)                   | 3.766 (95.7)                    | .078 (2.0)                      | .141 (3.6)                      | 84006-14         |
| E-950    | 9.5 (241.3)                     |                                 |                                 |                                 |                                 | 84006-15         |
| E-1000   | 10.0 (254.0)                    |                                 |                                 |                                 |                                 | 84006-16         |
| E-1050   | 10.5 (266.7)                    | 9.031 (229.4)                   | 4.516 (114.7)                   | .078 (2.0)                      | .141 (3.6)                      | 84006-17         |
| E-1100   | 11.0 (279.4)                    |                                 |                                 |                                 |                                 | 84006-18         |
| E-1150   | 11.5 (292.1)                    |                                 |                                 |                                 |                                 | 84006-19         |
| E-1200   | 12.0 (304.8)                    | 10.547 (267.9)                  | 5.274 (134.0)                   | .093 (2.4)                      | .156 (4.0)                      | 84006-20         |
| E-1250   | 12.5 (317.5)                    |                                 |                                 |                                 |                                 | 84006-21         |
| E-1300   | 13.0 (330.2)                    |                                 |                                 |                                 |                                 | 84006-22         |
| E-1350   | 13.5 (342.9)                    | 12.047 (306.0)                  | 6.024 (153.0)                   | .093 (2.4)                      | .156 (4.0)                      | 84006-23         |
| E-1400   | 14.0 (355.6)                    |                                 |                                 |                                 |                                 | 84006-24         |

**NOTE:** Slotting or elongating of 2nd and 3rd mounting holes is recommended to allow for length variations in molding and assembly ease.

## Flame Retardant Card Guides for 1/16" PCBs

- 25 Standard lengths from 2" through 14" in 1/2" increments
- Made from flame retardant nylon U.L. rated 94V-0 material
- Precision molded for rigidity, strength, natural lubricity and heat resistance.
- Available from stock.

Rigid, strong and economical,  
Flame Retardant TEMP-O-GIDES give you design flexibility.

Choose from 25 standard lengths and pick your density and air circulation pattern. Place guides just where you want. Spacing options are virtually unlimited.

Guide installation is a snap into any type of sheet, plate or channel. Retention is firm, and no special tooling is required.

Card insertion is fast and easy with funneled ramps. No more insertion hang ups.

Locking ejectors can be used for positive card retention and insertion/extraction ease.

### Material Specifications:

TEMP-O-GIDES: Brownish red,  
flame retardant Nylon.

### Mounting information:

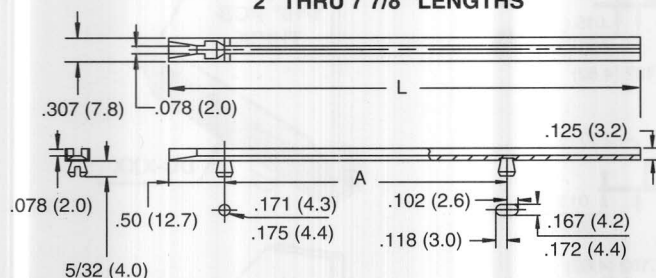
Snap-in metal plates: .047"/.090" (1.2)/(2.3) thick  
Hole size: .172" (4.4) dia., +.003 (.08), -.001 (0.3) (11/64" drill)

### Standard Drawing Tolerances,

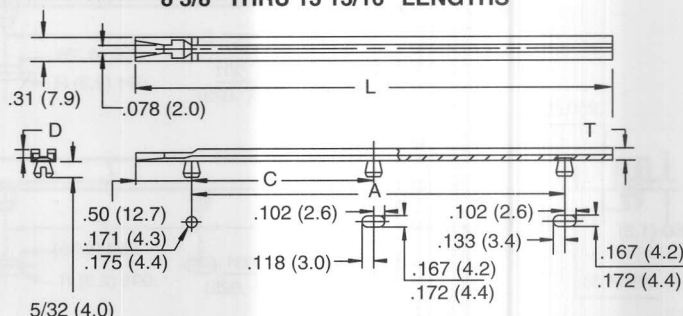
unless otherwise indicated:  
Fractions ± 1/64 (.40)  
.X ± 1/64 (.40)  
.XX ± .010 (.254)  
.XXX ± .005 (.127)



2" THRU 7 7/8" LENGTHS



8 3/8" THRU 13 13/16" LENGTHS



2" Thru 7 7/8" Lengths

| PART NO. | L<br>+.062 (1.6)<br>-.062 (1.6) | A<br>+.032 (.81)<br>-.032 (.81) |
|----------|---------------------------------|---------------------------------|
| FR-200   | 1.969 (50.0)                    | .984 (25.0)                     |
| FR-250   | 2.469 (62.7)                    | 1.484 (37.7)                    |
| FR-300   | 2.969 (75.4)                    | 1.484 (37.7)                    |
| FR-350   | 3.469 (88.1)                    | 1.484 (37.7)                    |
| FR-400   | 3.938 (100.0)                   | 2.969 (75.4)                    |
| FR-450   | 4.438 (112.7)                   | 2.969 (75.4)                    |
| FR-500   | 4.938 (125.4)                   | 2.969 (75.4)                    |
| FR-550   | 5.438 (138.1)                   | 2.969 (75.4)                    |
| FR-600   | 5.906 (150.0)                   | 4.953 (125.8)                   |
| FR-650   | 6.406 (162.7)                   | 4.953 (125.8)                   |
| FR-700   | 6.875 (174.6)                   | 5.969 (151.6)                   |
| FR-750   | 7.375 (187.3)                   | 5.969 (151.6)                   |
| FR-800   | 7.875 (200.0)                   | 5.969 (151.6)                   |

8 3/8" thru 13 13/16" Lengths

| PART NO. | L<br>+.062 (1.6)<br>-.062 (1.6) | A<br>+.032 (.81)<br>-.047 (1.2) | C<br>+.016 (.41)<br>-.032 (.81) | D<br>+.005 (.13)<br>-.005 (.13) | T<br>+.007 (.18)<br>-.007 (.18) |
|----------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| FR-850   | 8.375 (212.7)                   | 7.469 (189.7)                   | 3.735 (94.9)                    | .078 (2.0)                      | .141 (3.6)                      |
| FR-900   | 8.875 (225.4)                   | 7.469 (189.7)                   | 3.735 (94.9)                    | .078 (2.0)                      | .141 (3.6)                      |
| FR-950   | 9.375 (238.1)                   | 7.469 (189.7)                   | 3.735 (94.9)                    | .078 (2.0)                      | .141 (3.6)                      |
| FR-1000  | 9.875 (250.8)                   | 8.938 (227.0)                   | 4.469 (113.5)                   | .078 (2.0)                      | .141 (3.6)                      |
| FR-1050  | 10.375 (263.5)                  | 8.938 (227.0)                   | 4.469 (113.5)                   | .078 (2.0)                      | .141 (3.6)                      |
| FR-1100  | 10.875 (276.2)                  | 8.938 (227.0)                   | 4.469 (113.5)                   | .078 (2.0)                      | .141 (3.6)                      |
| FR-1150  | 11.344 (288.1)                  | 10.406 (264.3)                  | 5.203 (132.2)                   | .093 (2.4)                      | .156 (4.0)                      |
| FR-1200  | 11.844 (300.8)                  | 10.406 (264.3)                  | 5.203 (132.2)                   | .093 (2.4)                      | .156 (4.0)                      |
| FR-1250  | 12.344 (313.5)                  | 10.406 (264.3)                  | 5.203 (132.2)                   | .093 (2.4)                      | .156 (4.0)                      |
| FR-1300  | 12.812 (325.4)                  | 11.906 (302.4)                  | 5.953 (151.2)                   | .093 (2.4)                      | .156 (4.0)                      |
| FR-1350  | 13.312 (338.1)                  | 11.906 (302.4)                  | 5.953 (151.2)                   | .093 (2.4)                      | .156 (4.0)                      |
| FR-1400  | 13.812 (350.8)                  | 11.906 (302.4)                  | 5.953 (151.2)                   | .093 (2.4)                      | .156 (4.0)                      |

Color: Brownish Red

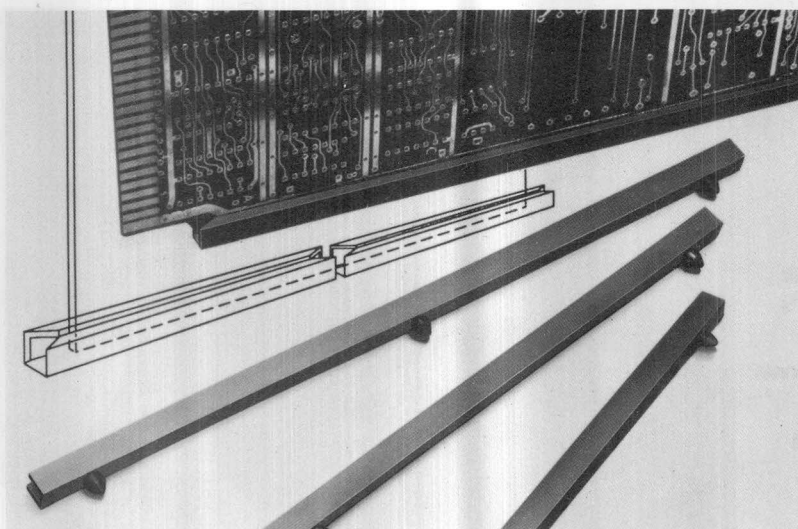
**NOTE:** Slotting or elongating of 2nd and 3rd mounting holes is recommended to allow for length variations in molding and assembly ease.

# GRIP-O-GIDE™

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

## Deep Channel Card Guides for 1/16", 3/32" & 1/8" PCBs



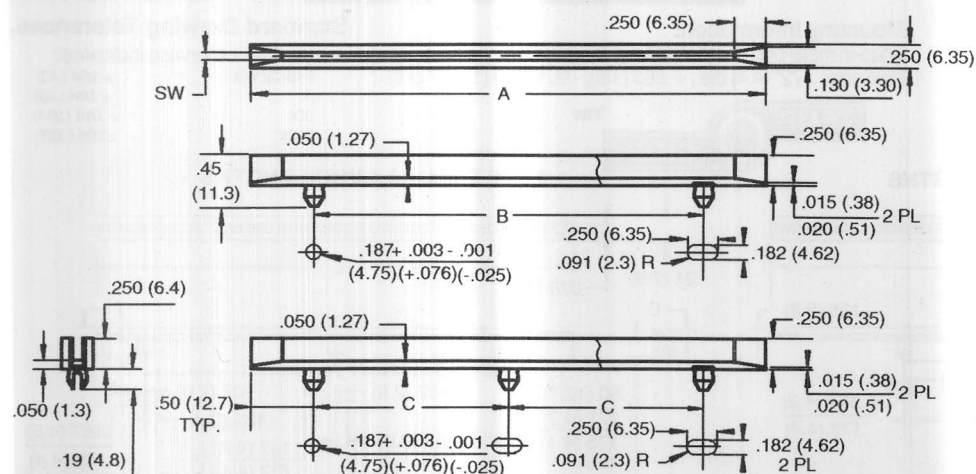
- .200" slot depths enhance board retention under shock and vibration.
- Double-ended funnel entry ramps offer multiple guide use for the largest boards.

GRIP-O-GIDES™ have a .200" slot depth providing maximum board retention for wide boards and high vibration and shock applications.

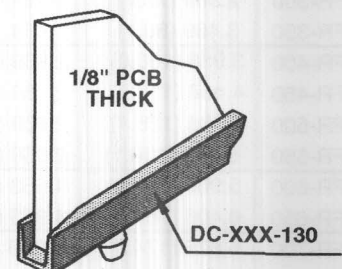
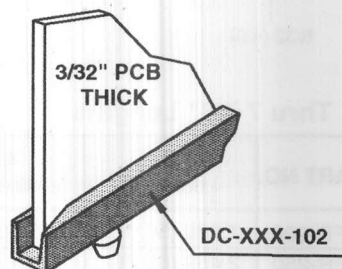
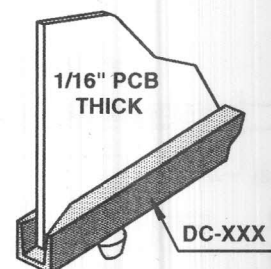
The guides are double-ended, so that they may be used in various length combinations to obtain virtually any overall length desired.

### MOUNTING INFORMATION:

Snap-In metal plates: .047/.090 (1.2)/(2.3) thick  
Hole Size: .187 (4.7) dia., +.003, (.08) -.001 (.03) 3/16 drill



**GRIP-O-GIDE™**



### GRIP-O-GIDES

2½" Thru 8" Lengths

Color: Black

| PART NO.   | A<br>±.062 (1.6) | B<br>±.032 (.81) | C<br>±.015 (.38) | S.W.<br>±.005 (.13) | PCB<br>THICKNESS | DESC<br>DWG. NO. |
|------------|------------------|------------------|------------------|---------------------|------------------|------------------|
| DC-250     | 2.5 (63.5)       | 1.5 (38.1)       | -                |                     |                  | 84101-01         |
| DC-450     | 4.5 (114.3)      | 3.5 (88.9)       | -                |                     |                  | 84101-02         |
| DC-600     | 6.0 (152.4)      | 5.0 (127.0)      | -                | .080 (2.0)          | 1/16 (1.6)       | 84101-03         |
| DC-800     | 8.0 (203.2)      | 7.0 (177.8)      | 3.5 (88.9)       |                     |                  | 84101-04         |
| DC-450-102 | 4.5 (114.3)      | 3.5 (88.9)       | -                |                     |                  |                  |
| DC-600-102 | 6.0 (152.4)      | 5.0 (127.0)      | -                | .102 (2.6)          | 3/32 (2.4)       |                  |
| DC-800-102 | 8.0 (203.2)      | 7.0 (177.8)      | 3.5 (88.9)       |                     |                  |                  |
| DC-450-130 | 4.5 (114.3)      | 3.5 (88.9)       | -                |                     |                  | 84101-22         |
| DC-600-130 | 6.0 (152.4)      | 5.0 (127.0)      | -                | .132 (3.4)          | 1/8 (3.2)        | 84101-23         |
| DC-800-130 | 8.0 (203.2)      | 7.0 (177.8)      | 3.5 (88.9)       |                     |                  | 84101-24         |

NOTE: Slotting or elongating of 2nd and 3rd mounting holes is recommended to allow for length variations in molding and assembly ease



## Horizontal Card Guides for PCMCIA TYPE I & TYPE II IC CARDS

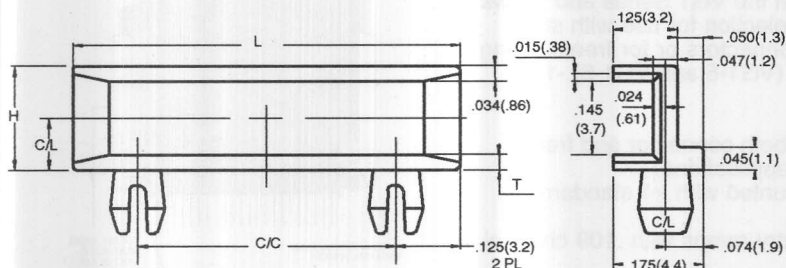
- Four standard lengths of .750" (19.1mm), 1.000" (25.4mm), 1.500" (38.1mm) & 1.750" (44.5mm)
- Center line heights of .106" (2.7mm) & .157" (4.0mm)
- Easily & firmly snap in with no special tooling
- Both ends have tapered ramp entries
- Precision molded from black, nylon rated 94V-0 by U.L.
- Stocked in depth

### Mounting Information:

Snap in 3/32" (2.4) holes in PCBs  
.057" (1.45) to .067" (1.70) thick

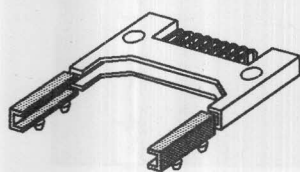
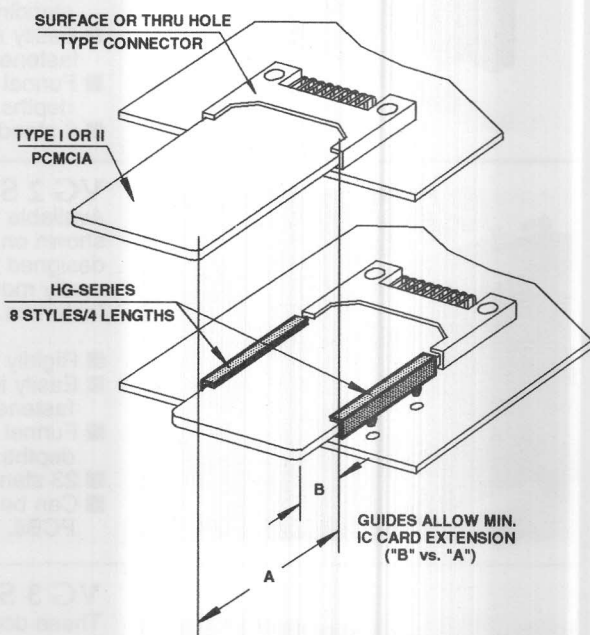
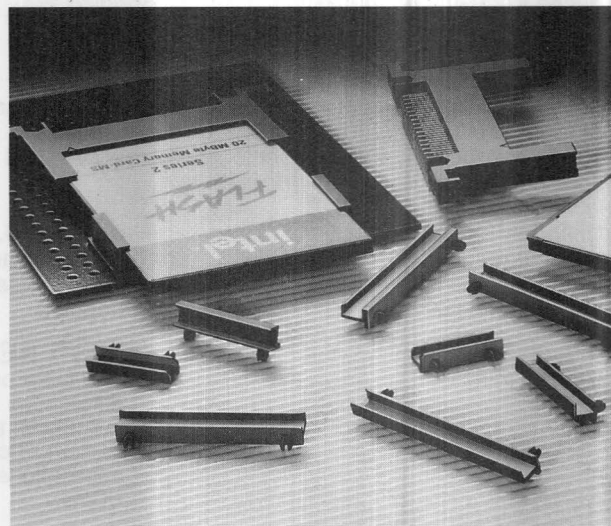
### Tolerances:

.X ± 1/64 (.40)  
.XX ± .010 (2.54)  
.XXX ± .005 (.127)

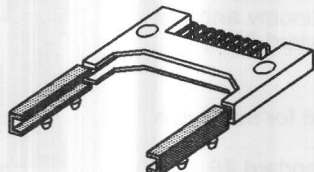


## HG SERIES 3/4" Thru 1 3/4" Lengths

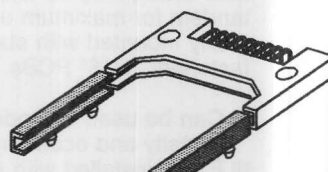
| PART NO.    | L            | C/C          | C/L        | T          | H          |
|-------------|--------------|--------------|------------|------------|------------|
| HG-750-106  | .750 (19.1)  | .500 (12.7)  | .106 (2.7) | .034 (.86) | .213 (5.4) |
| HG-750-157  |              |              | .157 (4.0) | .085 (2.2) | .264 (6.7) |
| HG-1000-106 | 1.000 (25.4) | .750 (19.1)  | .106 (2.7) | .034 (.86) | .213 (5.4) |
| HG-1000-157 |              |              | .157 (4.0) | .085 (2.2) | .264 (6.7) |
| HG-1500-106 | 1.500 (38.1) | 1.250 (31.8) | .106 (2.7) | .034 (.86) | .213 (5.4) |
| HG-1500-157 |              |              | .157 (4.0) | .085 (2.2) | .264 (6.7) |
| HG-1750-106 | 1.750 (44.5) | 1.500 (38.1) | .106 (2.7) | .034 (.86) | .213 (5.4) |
| HG-1750-157 |              |              | .157 (4.0) | .085 (2.2) | .264 (6.7) |



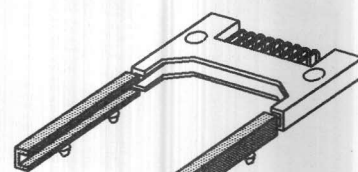
**HG-750  
SERIES**



**HG-1000  
SERIES**



**HG-1500  
SERIES**



**HG-1750  
SERIES**

# VERT-O-GIDE™

**94V-0**

U.L. RATED MATERIAL

## Vertical Card Guides For Vertically Mounting 1/16", 3/32" & 1/8" PCBs

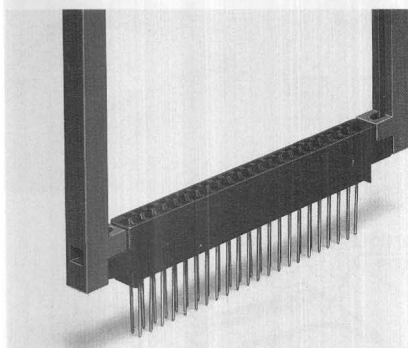
Available from stock in three distinct styles and a choice of lengths, VERT-O-GIDES have been designed and produced to meet the increasing need for supporting PC boards in a vertical position.



A wide selection to accommodate various board sizes allows for connector mounting, paired mounting and gang or tandem mounting. The use of standard fasteners simplifies mounting. No special tooling is required, and spacing options are virtually unlimited.

Uniformly molded from black, glass filled nylon with a U.L. material rating of 94V-0, these guides are both strong and rigid. Tapered ramp entries are featured for insertion ease, and channel depths of .109" assure board retention.

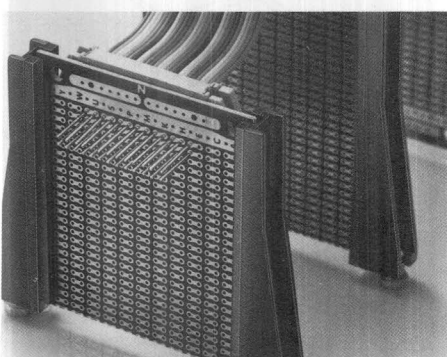
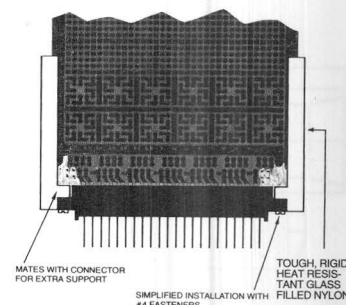
- Choice of mounting styles and lengths to accommodate various board sizes.
- Broad selection with 3 styles — easily mounted with standard fasteners.
- Economical, rigid, strong, heat resistant and stocked in depth.
- Black, glass filled nylon with U.L. 94V-0 material rating.
- Funnel entry ramps and .109" channel depths for firm PCB retention.



### VG 1 SERIES

The table on page 15 details the differences in the VG1 Series and allows the proper selection for use with standard PCB connectors or for freestanding applications (VG1-5 and VG1-6) -1/16" PCBs.

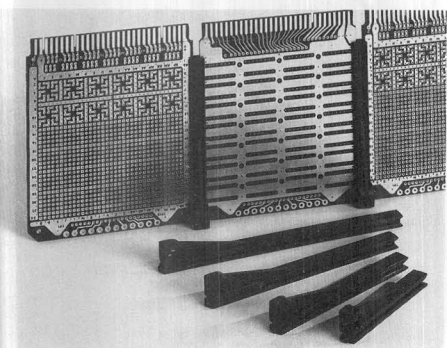
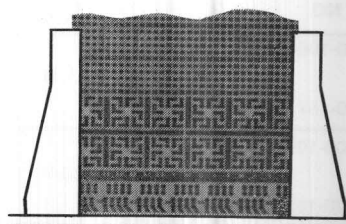
- Types for both connector and free-standing applications.
- Easily mounted with #4 standard fasteners.
- Funnel entry ramps with .109" channel depths.
- 6 standard sizes available from stock.



### VG 2 SERIES

Available from stock in 9 lengths as shown on page 15, the VG2 Series is designed to be used in pairs and is easily mounted with standard #6 fasteners.

- Rigidly reinforced and heat resistant.
- Easily installed with standard #6 fasteners. Built-in anti-rotation device.
- Funnel entry ramps with .109" channel depths.
- 23 standard sizes stocked in depth.
- Can be used with 1/16", 3/32" & 1/8" PCBs.

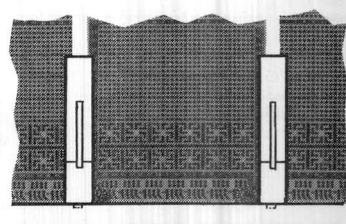


### VG 3 SERIES

These double sided guides are available from stock, may be used in pairs or in tandem for maximum economy and are easily mounted with standard #6 fasteners -1/16" PCBs.

- Can be used in tandem for maximum density and economy.
- Easily installed with standard #6 fasteners. Built-in anti-rotation device.
- Funnel entry ramps with .109" channel depths.
- 7 standard lengths stocked in depth.

**MATERIAL SPECIFICATIONS:** Black glass reinforced nylon; U.L. rated 94V-0 material.



#### STANDARD DRAWING TOLERANCES, UNLESS OTHERWISE INDICATED:

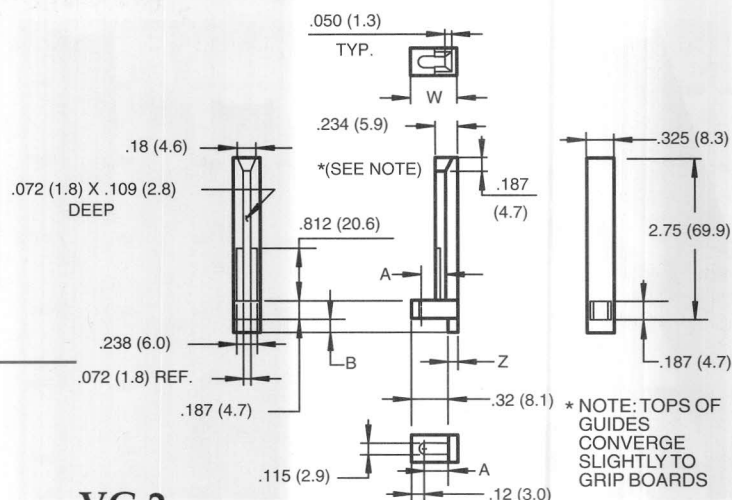
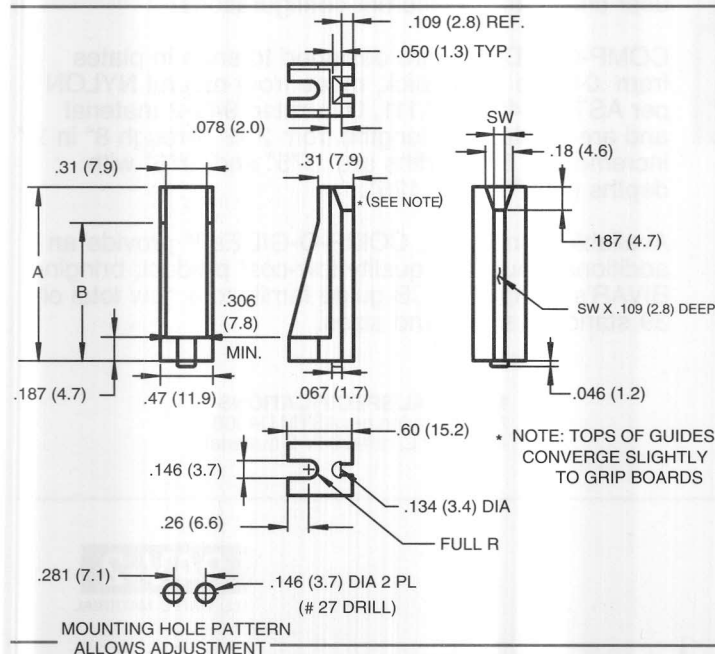
|           |               |
|-----------|---------------|
| Fractions | ± 1/64 (.40)  |
| .X        | ± 1/64 (.40)  |
| .XX       | ± .010 (.254) |
| .XXX      | ± .005 (.127) |

## Vertical Card Guides For Vertically Mounting 1/16", 3/32" & 1/8" PCBs

## VG 1

A choice of mounting styles to fit standard connectors or for freestanding mounting. Six sizes.

| DASH No. | A          | B          | W           | Z          |
|----------|------------|------------|-------------|------------|
| VG1-1    | .177 (4.5) | .213 (5.4) | .422 (10.7) | .102 (2.6) |
| VG1-2    | .177 (4.5) | .245 (6.2) | .422 (10.7) | .102 (2.6) |
| VG1-3    | .250 (6.4) | .213 (5.4) | .495 (12.5) | .175 (4.4) |
| VG1-4    | .250 (6.4) | .245 (6.2) | .495 (12.5) | .175 (4.4) |
| VG1-5    | .177 (4.5) | 0          | .422 (10.7) | 0          |
| VG1-6    | .250 (6.4) | 0          | .495 (12.5) | 0          |

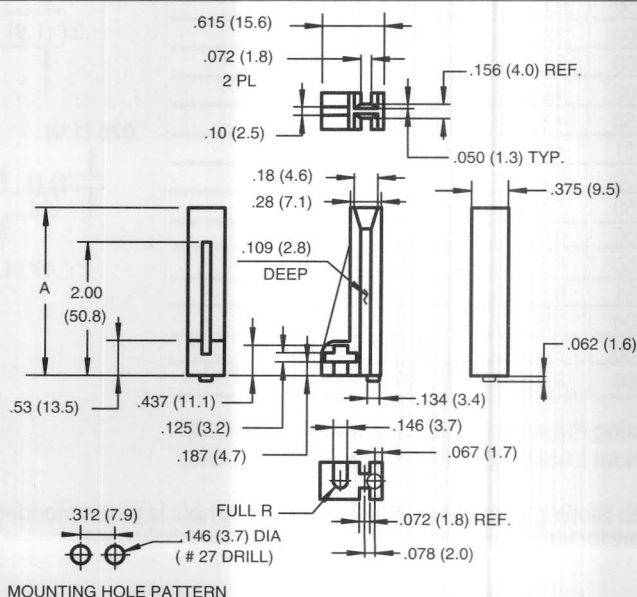


## VG 2

Nine standard lengths available from stock.  
Designed to be used in pairs. Nine lengths.

| DASH NO. | A           | B          | SW<br>1/16"PCB | SW*<br>3/32"PCB | SW*<br>1/8"PCB |
|----------|-------------|------------|----------------|-----------------|----------------|
| VG-2     | 2.0 (50.8)  | 1.5 (38.1) | .076 (1.9)     | -               | -              |
| VG2-25   | 2.5 (63.5)  | 1.5 (38.1) | .076 (1.9)     | -               | -              |
| VG2-3    | 3.0 (76.2)  | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-35   | 3.5 (88.9)  | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-4    | 4.0 (101.6) | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-45   | 4.5 (114.3) | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-5    | 5.0 (127.0) | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-55   | 5.5 (139.7) | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |
| VG2-6    | 6.0 (152.4) | 2.0 (50.8) | .076 (1.9)     | .102 (2.6)      | .134 (3.4)     |

\*For slot widths other than .076" (1.9), add-xxx e.g. VG2-4-134 is a VG2-4 guide with a slot width of .134 (3.4).



## VG 3

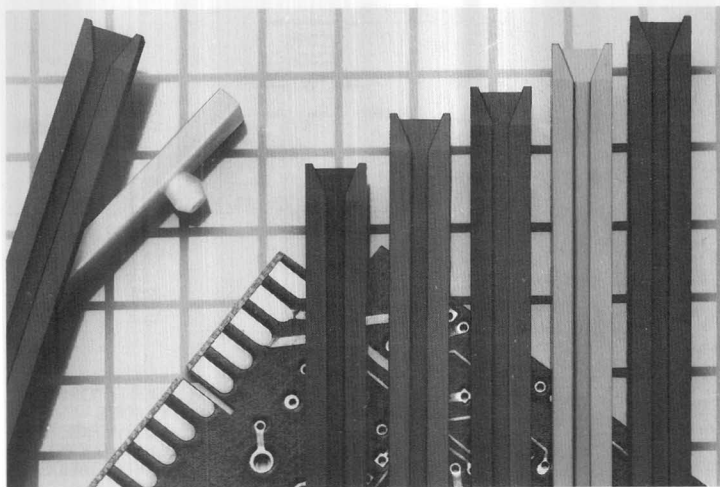
Double sided vertical guides which can be used in pairs or in tandem very economically. Seven lengths.

| DASH NO. | A           |
|----------|-------------|
| VG3-3    | 3.0 (76.2)  |
| VG3-35   | 3.5 (88.9)  |
| VG3-4    | 4.0 (101.6) |
| VG3-45   | 4.5 (114.3) |
| VG3-5    | 5.0 (127.0) |
| VG3-55   | 5.5 (139.7) |
| VG3-6    | 6.0 (152.4) |



## COMP-O-GIDE™

### Interchangeable Snap-In Card Guides for 1/16" PCBs



#### TOTAL INTERCHANGEABILITY PROVIDES SECOND SOURCING FOR COMPETITIVE STYLES

Designed specifically to allow second sourcing of many existing card guides supplied by other manufacturers, these COMP-O-GIDES™ are totally interchangeable and are immediately available from stock.

Pylon spacing and sizes to fit particular hole sizes allow for complete interchangeability, and additional, intermediate sizes are newly available, expanding user choice to 39 different configurations.

COMP-O-GIDES™ are designed to snap in plates from .047" to .090" thick, made from natural NYLON per ASTM D4066 PA111, U.L. rated 94V-2 material and are available in lengths from 2 1/2" through 8" in 1/2" increments. Slot widths are .075" and .076" with depths of .075" and .125".

Available from stock, COMP-O-GIDES™ provide an additional source of quality low-cost product, bringing BIVAR's complete PCB guide family to a new total of 39 standard styles and sizes.

- 39 styles and sizes totally interchangeable with other manufactured guides.
- Molded from natural nylon per ASTM D4066 PA111, U.L. rated 94V-2 material.
- Lengths from 2 1/2" through 8" in 1/2" increments.
- Available immediately from stock through a worldwide network of distributors.

#### MATERIAL SPECIFICATIONS

Natural Nylon per ASTM D4066  
PA111, U.L. rated 94V-2 material

#### SFS SERIES

| PART NO. | A<br>±.031 (.79) | D<br>±.016 (.41) | INTERCHANGE WITH S.A.E. |
|----------|------------------|------------------|-------------------------|
| SFS-250  | 2.5 (63.5)       | 1.5 (38.1)       | 1250F                   |
| SFS-300  | 3.0 (76.2)       | 2.0 (50.8)       |                         |
| SFS-350  | 3.5 (88.9)       | 2.5 (63.5)       |                         |
| SFS-400  | 4.0 (101.6)      | 3.0 (76.2)       |                         |
| SFS-450  | 4.5 (114.3)      | 3.0 (76.2)       | 1450F                   |
| SFS-451  | 4.5 (114.3)      | 3.5 (88.9)       |                         |
| SFS-500  | 5.0 (127.0)      | 4.0 (101.6)      |                         |
| SFS-550  | 5.5 (139.7)      | 4.5 (114.3)      |                         |
| SFS-600  | 6.0 (152.4)      | 5.0 (127.0)      | 1600F                   |
| SFS-650  | 6.5 (165.1)      | 5.02 (127.5)     | 1650F                   |
| SFS-651  | 6.5 (165.1)      | 5.5 (139.7)      |                         |
| SFS-700  | 7.0 (177.8)      | 6.0 (152.4)      |                         |
| SFS-750  | 7.5 (190.5)      | 6.5 (165.1)      |                         |
| SFS-800  | 8.0 (203.2)      | 7.0 (177.8)      | 1800F*                  |

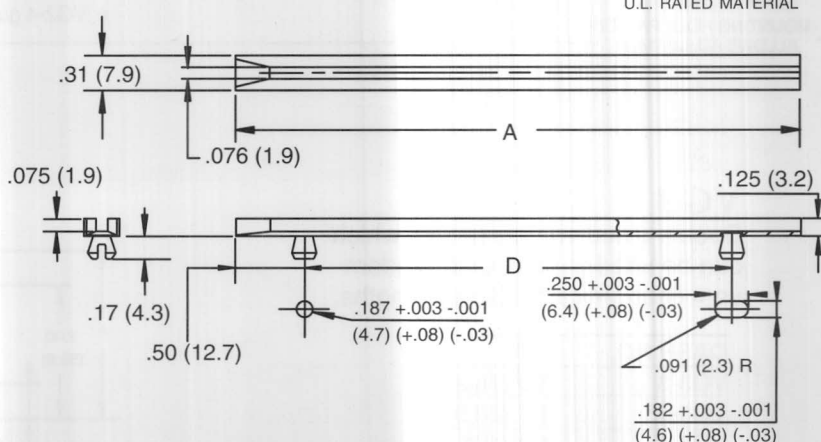
Mounting Plate thickness: .047" (1.2) -.090" (2.3)

\* Without Locking Ejector Pocket - 2 Pylons Only

**NOTE:** Slotting or elongating of 2nd mounting hole is recommended to allow for length variations in molding and assembly ease.

#### 94V-2

U.L. RATED MATERIAL



#### STANDARD DRAWING TOLERANCES:

|      |              |
|------|--------------|
| .X   | ±1/64 (.40)  |
| .XX  | ±.010 (.254) |
| .XXX | ±.005 (.127) |

## Interchangeable Snap-In Card Guides for 1/16" PCBs

### SSD SERIES

| PART NO.   | Z<br>±.031 (.79) | X<br>±.016 (.41) | INTERCHANGE<br>WITH SCANBE. |
|------------|------------------|------------------|-----------------------------|
| SSD-250    | 2.5 (63.5)       | 1.5 (38.1)       | 23071-1                     |
| SSD-300    | 3.0 (76.2)       | 2.0 (50.8)       | 23071-2                     |
| SSD-350    | 3.5 (88.9)       | 2.5 (63.5)       |                             |
| SSD-400    | 4.0 (101.6)      | 3.0 (76.2)       | 23071-3                     |
| SSD-450 3X | 4.5 (114.3)      | 3.0 (76.2)       | 23701-4                     |
| SSD-450    | 4.5 (114.3)      | 3.5 (88.9)       |                             |
| SSD-500    | 5.0 (127.0)      | 4.0 (101.6)      |                             |
| SSD-550    | 5.5 (139.7)      | 4.5 (114.3)      |                             |
| SSD-600    | 6.0 (152.4)      | 5.0 (127.0)      | 23071-5                     |
| SSD-650    | 6.5 (165.1)      | 5.5 (139.7)      | 23071-6                     |
| SSD-700    | 7.0 (177.8)      | 6.0 (152.4)      |                             |
| SSD-750    | 7.5 (190.5)      | 6.5 (165.1)      |                             |
| SSD-800    | 8.0 (203.2)      | 7.0 (177.8)      |                             |

Mounting Plate Thickness: .047" (1.2) - .090" (2.3)

**NOTE:** Slotting or elongating of 2nd mounting hole is recommended to allow for length variations in molding and assembly ease.

### SDC SERIES

| PART NO. | Z<br>±.031 (.79) | X<br>±.016 (.41) | INTERCHANGE<br>WITH SCANBE. |
|----------|------------------|------------------|-----------------------------|
| SDC-250  | 2.5 (63.5)       | 1.5 (38.1)       | 11633-1                     |
| SDC-300  | 3.0 (76.2)       | 2.0 (50.8)       |                             |
| SDC-350  | 3.5 (88.9)       | 2.5 (63.5)       |                             |
| SDC-400  | 4.0 (101.6)      | 3.0 (76.2)       |                             |
| SDC-450  | 4.5 (114.3)      | 3.5 (88.9)       | 11633-2                     |
| SDC-500  | 5.0 (127.0)      | 4.0 (101.6)      |                             |
| SDC-550  | 5.5 (139.7)      | 4.5 (114.3)      |                             |
| SDC-600  | 6.0 (152.4)      | 5.0 (127.0)      |                             |
| SDC-650  | 6.5 (165.1)      | 5.5 (139.7)      | 11633-3                     |
| SDC-700  | 7.0 (177.8)      | 6.0 (152.4)      |                             |
| SDC-750  | 7.5 (190.5)      | 6.5 (165.1)      |                             |
| SDC-800  | 8.0 (203.2)      | 7.0 (177.8)      | 11633-6                     |

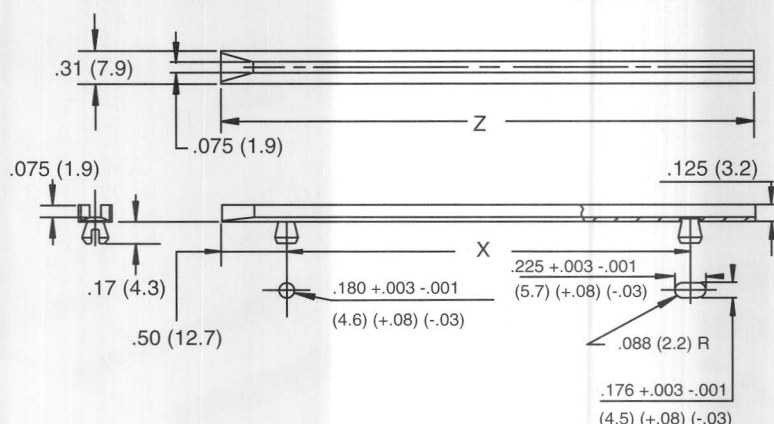
Mounting Plate Thickness: .047" (1.2) - .090" (2.3)

**NOTE:** Slotting or elongating of 2nd mounting hole is recommended to allow for length variations in molding and assembly ease.

**NOTE:** Ramps on both ends.

### 94V-2

U.L. RATED MATERIAL

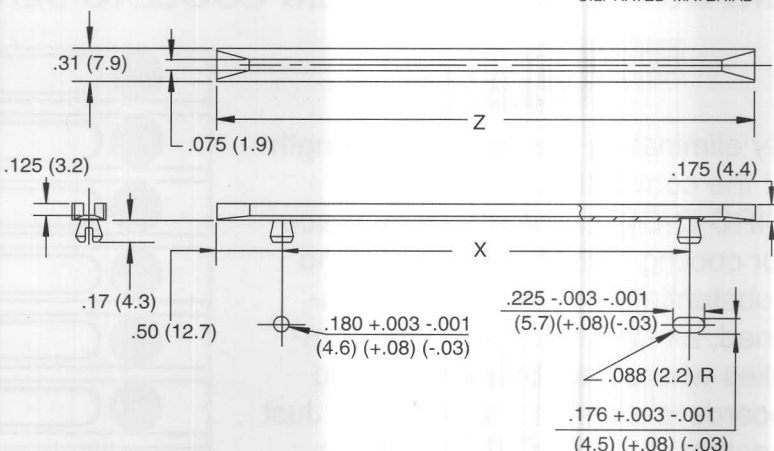


### STANDARD DRAWING TOLERANCES:

|      |              |
|------|--------------|
| .X   | ±1/64 (.40)  |
| .XX  | ±.010 (.254) |
| .XXX | ±.005 (.127) |

### 94V-2

U.L. RATED MATERIAL



### STANDARD DRAWING TOLERANCES:

|      |              |
|------|--------------|
| .X   | ±1/64 (.40)  |
| .XX  | ±.010 (.254) |
| .XXX | ±.005 (.127) |

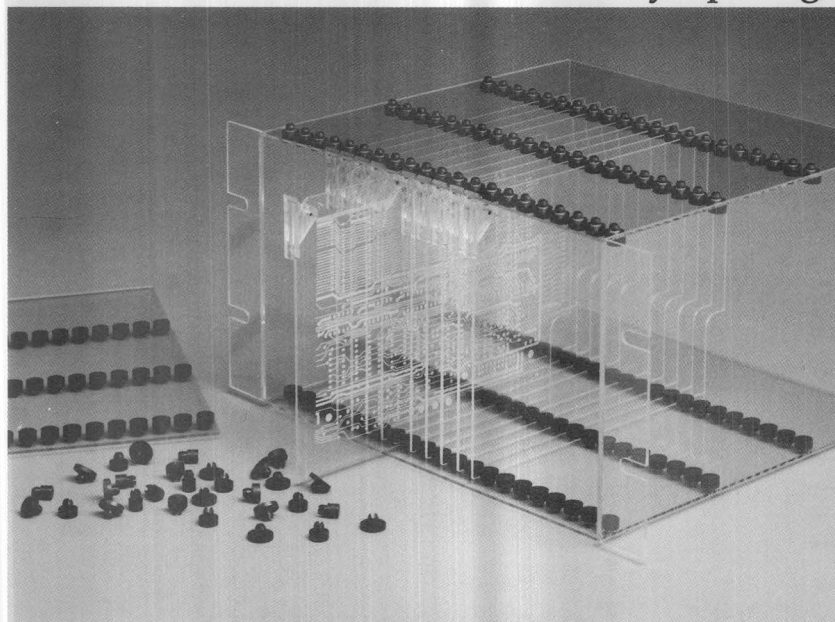
# CIRC-O-GIDE<sup>TM</sup>

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

## Snap-In Button-Style Card Guides

### The Solution To Card Guide Inventory, Spacing, and Costs



Made of black, glass reinforced NYLON per ASTM D4066, U.L. rated material 94V-0, they may be positioned to allow a .076" gap for 1/16" PCBs. They are available for .312", .400", .500", .600", .750", .800 and 1.000" standard spacings. Each size can be ordered in thicknesses of .078", .109", .125", .156" and .187". When pairs are used throughout, any spacing or spacings in excess of .312" can be used, giving the designer nearly absolute license in choosing locations, density and gripping action. When standard spacing is used, **CIRC-O-GIDES** function as aligned pairs for the first PCB and as single rows thereafter. This unique combination of alternatives offers substantial economies in PCB packaging costs.

- Use for any PCB length, thickness or spacing.
- 35 thickness and diameter combinations to meet spacing requirements from .312" to 1.000".
- Easy snap-in by hand, yet remains in place firmly.
- Affords lower inventory requirements compared to conventional card guides.
- Allows designer complete versatility.
- Offers improved card/system cooling possibilities.
- Available from stock at low cost.

**CIRC-O-GIDE<sup>TM</sup>** snap-in guides provide a totally new method for the spacing, guiding and firm retention of printed circuit boards, adding a new dimension of versatility, and simplicity at reduced costs.

These button-like **CIRC-O-GIDES** snap into .172" diameter holes in mounting base thicknesses from .047" through .090", such as card cages, PCB retaining rails or flat sheet and drawer installations for remarkable savings in space and installation time.

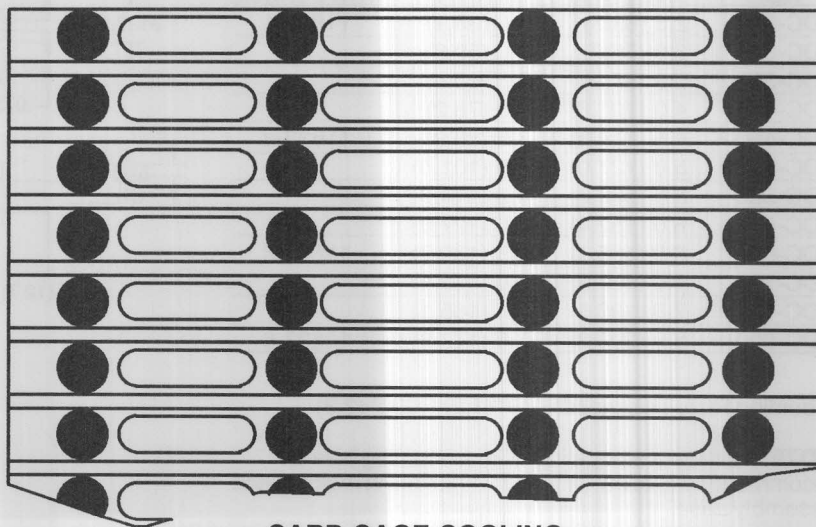
As an additional benefit, **CIRC-O-GIDES** can substantially reduce inventory requirements experienced with conventional card guides. Installation is extremely simple by hand, and no special tools are required.

Bivar **CIRC-O-GIDES** are available from stock in 35 thickness and diameter combinations.

## IMPROVED CARD/SYSTEM COOLING BENEFIT



By eliminating the continuous length of the conventional card guide, **CIRC-O-GIDES** afford added space for cooling slots in card cages and substantially open otherwise confined, air-limiting spaces in assemblies where heat between printed boards is a continuing concern. Just another way that **CIRC-O-GIDES** provide an inexpensive alternative to higher-cost inventory and assembly.

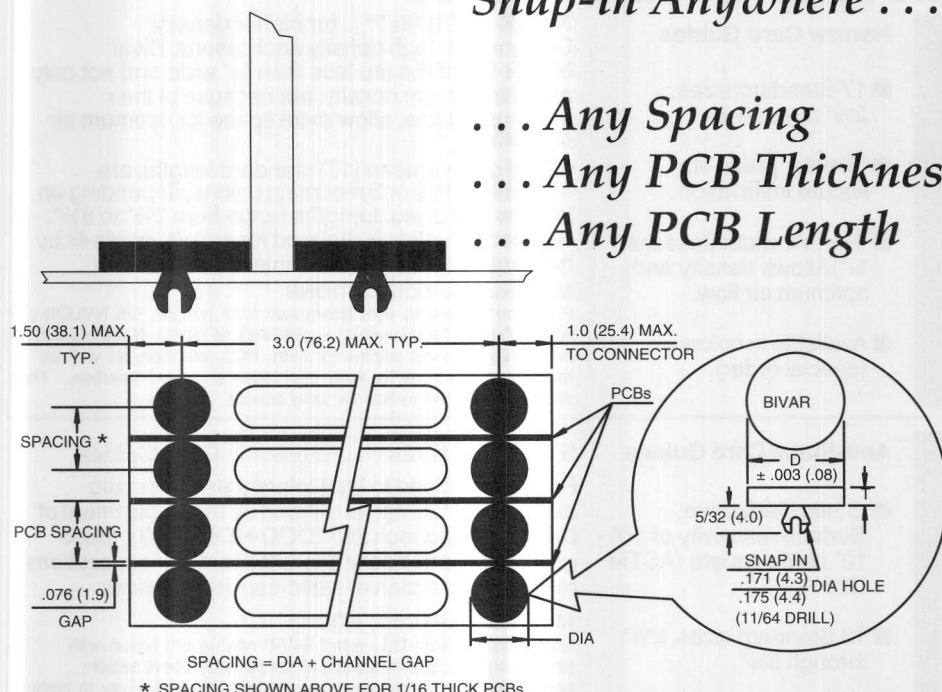


**CARD CAGE COOLING**



*Snap-in Anywhere . . .*

*. . . Any Spacing  
. . . Any PCB Thickness  
. . . Any PCB Length*

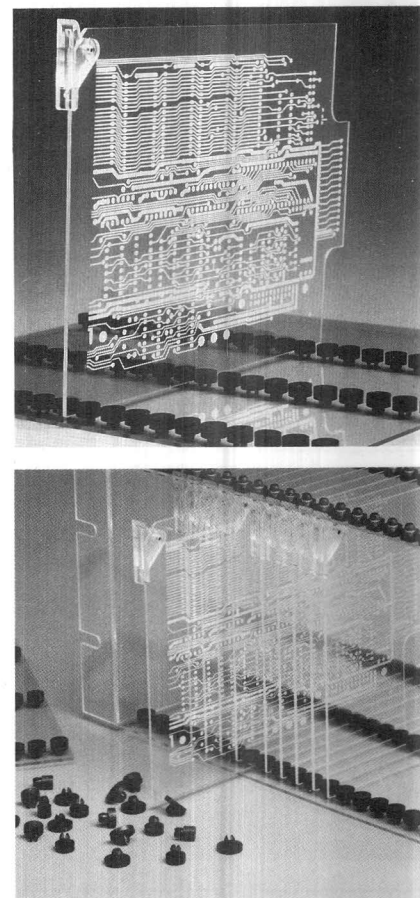


Spacing equals CIRC-O-GIDE diameter plus channel gap of .076". For 3/32" PCBs, adjust spacing by adding .032", and for 1/8" PCBs, add .063" to increase channel gaps.

**MATERIAL SPECIFICATIONS:**  
Black glass reinforced Nylon.  
Rated by U.L. 94V-0 material.

**STANDARD DRAWING TOLERANCES:**  
X ±1/64 (.40)  
XX ±.010 (.254)  
XXX ±.005 (.127)

**MOUNTING INFORMATION:**  
Snap-in Metal Plates: .047/.090 (1.2)/(2.3) thick  
Hole Size: .172 (4.4) Dia., ±.003 (.08),  
-.001(0.3) (11/64 drill)



## CIRC-O-GIDEs

**COLOR: BLACK**

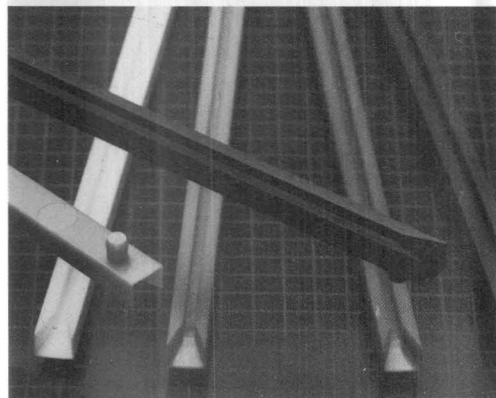
| PART NO. | PCB/GUIDE SPACING* | T ±.005(.13) | D ±.003 (.08) | PRICE CODE |
|----------|--------------------|--------------|---------------|------------|
| 312-078  | .312 (7.9)         | .078 (2.0)   | .236 (6.0)    | F          |
| 312-109  | .312 (7.9)         | .109 (2.8)   | .236 (6.0)    | F          |
| 312-125  | .312 (7.9)         | .125 (3.2)   | .236 (6.0)    | F          |
| 312-156  | .312 (7.9)         | .156 (3.2)   | .236 (6.0)    | G          |
| 312-187  | .312 (7.9)         | .187 (4.8)   | .236 (6.0)    | G          |
| 400-078  | .400 (10.2)        | .078 (2.0)   | .324 (8.2)    | G          |
| 400-109  | .400 (10.2)        | .109 (2.8)   | .324 (8.2)    | G          |
| 400-125  | .400 (10.2)        | .125 (3.2)   | .324 (8.2)    | G          |
| 400-156  | .400 (10.2)        | .156 (4.0)   | .324 (8.2)    | H          |
| 400-187  | .400 (10.2)        | .187 (4.8)   | .324 (8.2)    | H          |
| 500-078  | .500 (12.7)        | .078 (2.0)   | .424 (10.8)   | H          |
| 500-109  | .500 (12.7)        | .109 (2.8)   | .424 (10.8)   | H          |
| 500-125  | .500 (12.7)        | .125 (3.2)   | .424 (10.8)   | H          |
| 500-156  | .500 (12.7)        | .156 (4.0)   | .424 (10.8)   | I          |
| 500-187  | .500 (12.7)        | .187 (4.8)   | .424 (10.8)   | I          |
| 600-078  | .600 (15.2)        | .078 (2.0)   | .524 (13.3)   | I          |
| 600-109  | .600 (15.2)        | .109 (2.8)   | .524 (13.3)   | I          |
| 600-125  | .600 (15.2)        | .125 (3.5)   | .524 (13.3)   | I          |

| PART NO. | PCB/GUIDE SPACING* | T ±.005(.13) | D ±.003 (.08) | PRICE CODE |
|----------|--------------------|--------------|---------------|------------|
| 600-156  | .600 (15.2)        | .156 (4.0)   | .524 (13.3)   | J          |
| 600-187  | .600 (15.2)        | .187 (4.8)   | .524 (13.3)   | J          |
| 750-078  | .750 (19.1)        | .078 (2.0)   | .674 (17.1)   | J          |
| 750-109  | .750 (19.1)        | .109 (2.8)   | .674 (17.1)   | J          |
| 750-125  | .750 (19.1)        | .125 (3.2)   | .674 (17.1)   | J          |
| 750-156  | .750 (19.1)        | .156 (4.0)   | .674 (17.1)   | J          |
| 750-187  | .750 (19.1)        | .187 (4.8)   | .674 (17.1)   | K          |
| 800-078  | .800 (20.3)        | .078 (2.0)   | .724 (18.4)   | J          |
| 800-109  | .800 (20.3)        | .109 (2.8)   | .724 (18.4)   | J          |
| 800-125  | .800 (20.3)        | .125 (3.2)   | .724 (18.4)   | J          |
| 800-156  | .800 (20.3)        | .156 (4.0)   | .724 (18.4)   | K          |
| 800-187  | .800 (20.3)        | .187 (4.8)   | .724 (18.4)   | K          |
| 1000-078 | 1.00 (25.4)        | .078 (2.0)   | .924 (23.5)   | K          |
| 1000-109 | 1.00 (25.4)        | .109 (2.8)   | .924 (23.5)   | K          |
| 1000-125 | 1.00 (25.4)        | .125 (3.2)   | .924 (23.5)   | K          |
| 1000-156 | 1.00 (25.4)        | .156 (4.0)   | .924 (23.5)   | K          |
| 1000-187 | 1.00 (25.4)        | .187 (4.8)   | .924 (23.5)   | K          |

\* SPACING FOR 1/16" (1.6) PCBs

# NARR-O-GIDE™ /STAT-O-GIDE™

## Narrow and Anti-Static Snap-In Card Guides



### Narrow Card Guides

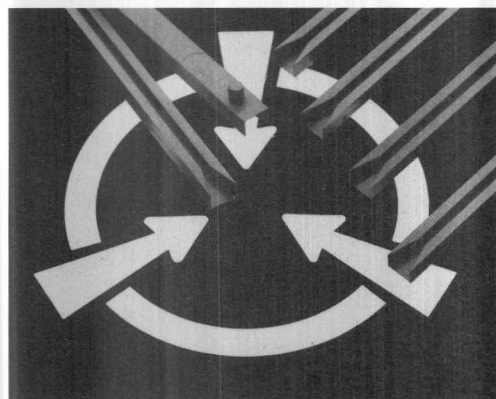
- 17 Standard sizes, 2½" through 8½"
- Simple, press-fit, secure installation.
- Narrow width (less than ¼") Allows density and optimum air flow.
- Available in colors (special order).

NARR-O-GIDES™ ... for higher density. Designed for high density applications, Bivar NARR-O-GIDES are less than ¼" wide and not only afford maximum density, but because of their minimum widths, allow extra space for optimum air circulation.

A total of seventeen (17) standard lengths are available with 2 or 3 mounting pylons, depending on lengths and sizes. Lengths range from 2½" to 8½". No special tools are required for simple, press-fit by hand installation in .125" diameter holes.

### MATERIAL SPECIFICATIONS

Precision molded to tight tolerances from natural, 6/6 NYLON per ASTM D4066 PA111 with U.L. RATING of 94V-2, NARR-O-GIDES have .125" channel depths for extra PCB retention, as well as ramps on both ends for easy orientation and card insertion. They can be combined in-line for long boards.



### Anti-Static Card Guides

- Static dissipative. Surface resistivity of 10<sup>5</sup> - 10<sup>9</sup> ohms/square (ASTM D257).
- 13 Standard sizes, 2½" through 8½"
- Narrow width (less than ¼") allows maximum density and optimum air flow.

### STAT-O-GIDES™...Anti-Static Card Guides

Precision molded to tight tolerances from static dissipative material as defined by the Department of Defense Handbook 263 (DOD-HDBK-263), these guides are specifically designed for ESD applications requiring protection of static-sensitive devices.

### MATERIAL SPECIFICATIONS

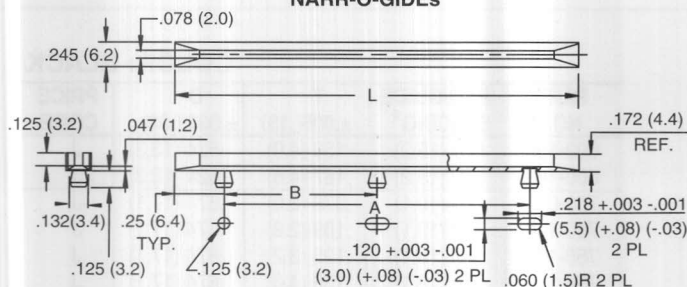
Manufactured from U.L. rated 94V-0 natural 6/6 Nylon with permanently bound-in electrical grade PAN fibers which prevent sluffing or transfer of conductive material. Gray in color. Surface resistivity is in a range of 10<sup>5</sup> - 10<sup>9</sup> ohms/square (ASTM D-257), and they have superior dimensional stability and heat resistance. Static decay performance meets or exceeds both NFPA and MIL-B-81705B requirements.

NARR-O-GIDES and STAT-O-GIDES snap-in sheet metal from .048"/.085" (1.2/2.2) thick, U.S. sheet metal gauges 18/14. Tolerances: ±.005" (.13), unless otherwise indicated.

Mounting Hole Sizes: .125"(3.2) Front  
All +.003" (.08), -.001" (.03), .120" (3.0) x .218" (5.5) slot (Rear and Center)

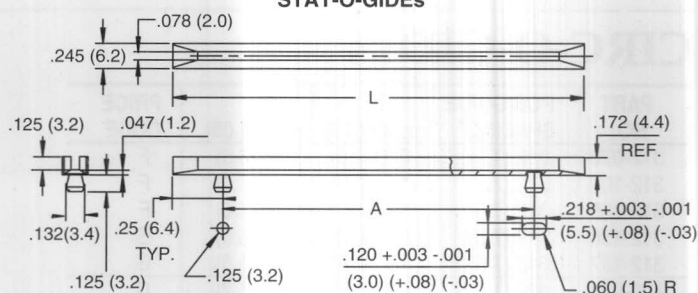
**94V-2**  
U.L. RATED MATERIAL

### NARR-O-GIDES



**94V-0**  
U.L. RATED MATERIAL

### STAT-O-GIDES



| PART NO. | L<br>±.030 (.76) | A<br>±.024 (.61) | B<br>±.016 (.41) |
|----------|------------------|------------------|------------------|
| N-250-2  | 2.5 (63.5)       | 2.0 (50.8)       | -                |
| N-300-2  | 3.0 (76.2)       | 2.5 (63.5)       | -                |
| N-350-2  | 3.5 (88.9)       | 3.0 (76.2)       | -                |
| N-400-2  | 4.0 (101.6)      | 3.5 (88.9)       | -                |
| N-450-2  | 4.5 (114.3)      | 4.0 (101.6)      | -                |
| N-500-2  | 5.0 (127.0)      | 4.5 (114.3)      | -                |
| N-550-2  | 5.5 (139.7)      | 5.0 (127.0)      | -                |
| N-600-2  | 6.0 (152.4)      | 5.5 (139.7)      | -                |
| N-650-2  | 6.5 (165.1)      | 6.0 (152.4)      | -                |

| PART NO. | L<br>±.030 (.76) | A<br>±.024 (.61) | B<br>±.016 (.41) |
|----------|------------------|------------------|------------------|
| N-700-2  | 7.0 (177.8)      | 6.5 (165.1)      | -                |
| N-700-3  | 7.0 (177.8)      | 6.5 (165.1)      | 3.25 (82.5)      |
| N-750-2  | 7.5 (190.5)      | 7.0 (177.8)      | -                |
| N-750-3  | 7.5 (190.5)      | 7.0 (177.8)      | 3.5 (88.9)       |
| N-800-2  | 8.0 (203.2)      | 7.5 (190.5)      | -                |
| N-800-3  | 8.0 (203.2)      | 7.5 (190.5)      | 3.75 (95.2)      |
| N-850-2  | 8.5 (215.9)      | 8.0 (203.2)      | -                |
| N-850-3  | 8.5 (215.9)      | 8.0 (203.2)      | 4.00 (101.6)     |

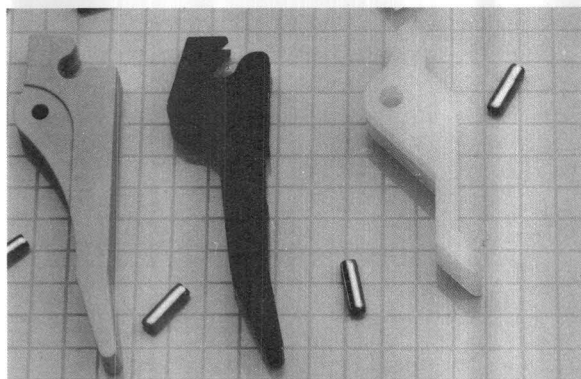
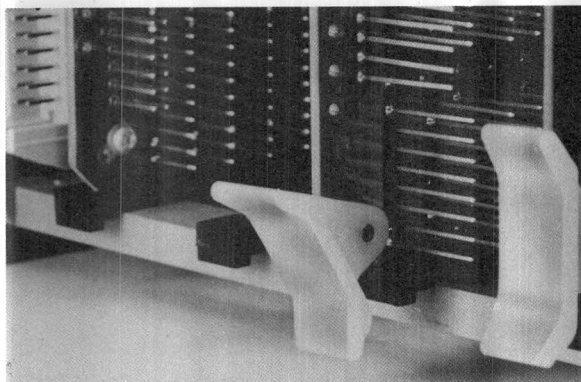
| PART NO. | L<br>±.030 (.76) | A<br>±.024 (.61) |
|----------|------------------|------------------|
| S-250    | 2.538 (64.5)     | 2.030 (51.6)     |
| S-300    | 3.045 (77.3)     | 2.538 (64.5)     |
| S-350    | 3.553 (90.2)     | 3.045 (77.3)     |
| S-400    | 4.060 (103.1)    | 3.553 (90.2)     |
| S-450    | 4.568 (116.0)    | 4.060 (103.1)    |
| S-500    | 5.075 (128.9)    | 4.568 (116.0)    |
| S-550    | 5.583 (141.8)    | 5.075 (128.9)    |

| PART NO. | L<br>±.030 (.76) | A<br>±.024 (.61) |
|----------|------------------|------------------|
| S-600    | 6.090 (154.7)    | 5.583 (141.8)    |
| S-650    | 6.598 (167.6)    | 6.090 (154.7)    |
| S-700    | 7.105 (180.5)    | 6.598 (167.6)    |
| S-750    | 7.613 (193.4)    | 7.105 (180.5)    |
| S-800    | 8.120 (206.2)    | 7.613 (193.4)    |
| S-850    | 8.628 (219.2)    | 8.120 (206.2)    |

**NOTE:** Slotting or elongating of 2nd and 3rd mounting holes is recommended to allow for length variations in molding and assembly ease.

# CARD-O-PULL™ & INSERTER/EXTRACTORS

## Printed Circuit Board Card Ejectors & Handles



- Protect components, circuitry, connectors, PCBs and system from damage.
- Designed for 1/16", 3/32" and 1/8" PCBs. Can be used in most systems.
- Aids insertion and extraction of PCBs — eliminates extraction tools.
- Available in locking versions.
- Available with pre-assembled mounting pins.
- Available from stock.

By using a simple lever action CARD-O-PULLS can eliminate your 1/16", 3/32" and 1/8" card problems by preventing undue stresses on your components, circuitry, connectors and PCBs and support system.

Locking versions are available to prevent accidental release of cards from connectors.

Easy to use and install, choose from 18 standard designs which can be color coded and/or permanently marked for you.

| DESC<br>DGW. NO. | BIVAR<br>PART NO. | PAGE<br>NO. |
|------------------|-------------------|-------------|
| 83023-01         | CP-36             | 23          |
| 83023-02         | CP-06             | 23          |
| 83023-03         | CP-26             | 23          |
| 83023-04         | CP-66             | 23          |
| 83023-05         | CP-39             | 23          |
| 83023-06         | CP-09             | 23          |
| 83023-07         | CP-29             | 23          |
| 83023-08         | CP-69             | 23          |
| 83023-09         | 1107-062          | 22          |
| 83023-10         | 11073-125         | 22          |
| 83023-11         | 110710-062        | 22          |
| 83023-13         | LP-36             | 23          |
| 83023-19W        | 1209-062          | 22          |
| 83023-20W        | 1209-093          | 22          |
| 83023-21W        | 1209-125          | 22          |

**Passivated stainless steel Spring Pins per MIL-P-10971 furnished with each Ejector.**

### 94V-2

U.L. RATED MATERIAL

**MATERIAL SPECIFICATIONS:**  
White Nylon per ASTM D4066  
PA111, U.L. Rated 94V-2, 3/32" dia. x 1/4" or 5/16" long.

### 94V-0

U.L. RATED MATERIAL

Refer to page 22 for U.L. Rated Material of 94V-0

### STANDARD DRAWING TOLERANCES.

|           |               |
|-----------|---------------|
| Fractions | ± 1/64 (.40)  |
| .X        | ± 1/64 (.40)  |
| .XX       | ± .010 (.254) |
| .XXX      | ± .005 (.127) |

### MOUNTING SLOT DIMENSIONS:

|                                  |
|----------------------------------|
| 1/16" PCBs = .073 (1.85)         |
| 3/32" PCBs = .100 (2.54)         |
| 1/8" PCBs = .140 (3.56)          |
| NOTE: Flanges converge slightly. |

**MARKING** CARD-O-PULLS & Inserter/Extractors can be marked numerically, alphabetically or both to code circuit boards. The hot stamping method is used and its durability is accepted by both military and commercial users. See below. Specify size 1 or 2, and marking style A, B, C or D.

### MARKING SIZE

|      |                                       |
|------|---------------------------------------|
| Size |                                       |
| 1    | A16537B245890CDEFGHIJKLMNOPQRSTUVWXYZ |
| 2    | A16537B245890CDEFGHIJKLMNOPQRSTUVWXYZ |

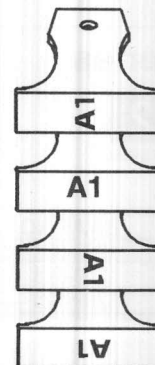
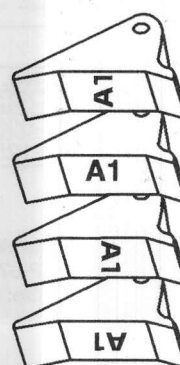
### COLOR CODING

CARD-O-PULLS & Inserter/Extractors can be colored in a variety of colors to code your circuit board for quick identification.

WHITE is standard, unless a color is specified.

|        |        |
|--------|--------|
| RED    | PINK   |
| BLUE   | GRAY   |
| ORANGE | VIOLET |
| GREEN  | BROWN  |
| YELLOW | AQUA   |
| LIME   | BLACK  |

|                        |                            |
|------------------------|----------------------------|
| Approx. Overall Height | No. of Characters Per Inch |
| .075                   | 12                         |
| .110                   | 8                          |



| STYLE |
|-------|
| A     |
| B     |
| C     |
| D     |

### PRE-ASSEMBLED PIN EJECTORS

All ejectors & inserter/extractors (see page 22 & 23) can be ordered with pre-assembled mounting pins to save assembly time and labor costs. To order, add PA as a suffix to part number e.g. CP-06PA.



# INSERTER/EXTRACTORS

## For Printed Circuit Board Insertion/Removal

- Select from 14 standard stocked styles for 1/16", 3/32" and 1/8" PCBs
- Strong and rigid with optimum leverages to assist in both insertion and extraction
- Directly interchangeable with competitive styles; Widest selection of standards
- Readily available from stock at economical prices
- Large areas for hot stamping
- Special colors available

Designed to solve tough insertion/extraction problems associated with large PCBs and tight gripping multi-pin edge connectors. Bivar's inserter/extractors are particularly strong. They use a cam type in/out action and have leverages up to 4:1.

Easy to use and install for damage-free insertions and extractions, PCBs, components, circuitry and connectors are protected from undue stresses.

Color codings and hot stampings are available on special order (refer to page 21 for specifications).

Appropriate passivated stainless steel spring pins per MIL-P-10971, furnished with each inserter/extractor (see page 23)



### MATERIAL SPECIFICATIONS

| Series | Material   | U.L. Rating | Std. Color(s)                        |
|--------|--|-------------|--------------------------------------|
| 1001   | 6/6 Nylon per ASTM D4066 PA111                     | 94V-2       | Specify natural or black             |
| 1007   | 30% glass filled Nylon per ASTM D4066 PA111 G30F04 | 94V-0       | Specify black or natural (off white) |
| 1209   | 6/6 Nylon per ASTM D4066 PA111                     | 94V-2       | Natural                              |

### 1001 Series

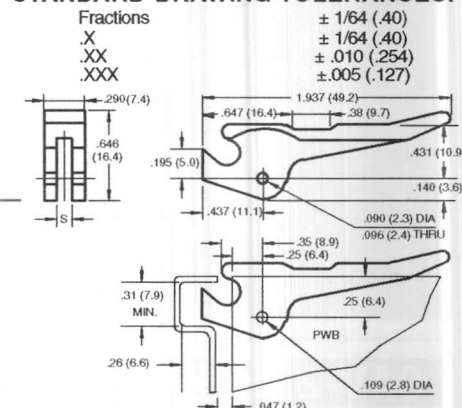
**94V-2**

U.L. RATED MATERIAL

| Part No. | S          | PWB        |
|----------|------------|------------|
| 1001-062 | .075 (1.9) | .062 (1.6) |
| 1002-093 | .100 (2.5) | .093 (2.4) |
| 1003-125 | .140 (3.6) | .125 (3.2) |

Standard Colors: Black or natural, specify color.  
RP-250 Spring Pins Furnished (see page 23)  
Note: Flanges converge slightly.

### STANDARD DRAWING TOLERANCES:

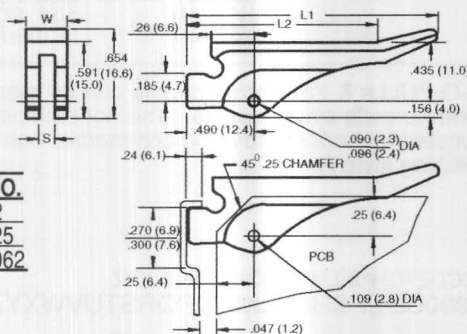


### 1107 Series

**94V-0**

U.L. RATED MATERIAL

| DESC DWG. | BIVAR NO.  |
|-----------|------------|
| 82023-09  | 1107-062   |
| 83023-10  | 11073-125  |
| 83023-11  | 110710-062 |



| Part No.    | S          | W          | L1         | L2         | PCB        |
|-------------|------------|------------|------------|------------|------------|
| 1107-062    | .075 (1.9) | .290 (7.4) | 2.0 (50.8) | -          | .062 (1.6) |
| 11073-062   | .075 (1.9) | .350 (8.9) | 2.0 (50.8) | -          | .062 (1.6) |
| 11073-093   | .100 (2.5) | .350 (8.9) | 2.0 (50.8) | -          | .093 (2.4) |
| 11073-125   | .140 (3.6) | .350 (8.9) | 2.0 (50.8) | -          | .125 (3.2) |
| 110710-062  | .075 (1.9) | .290 (7.4) | -          | 1.5 (38.1) | .062 (1.6) |
| 1107310-062 | .075 (1.9) | .350 (8.9) | -          | 1.5 (38.1) | .062 (1.6) |
| 1107310-093 | .100 (2.5) | .350 (8.9) | -          | 1.5 (38.1) | .093 (2.4) |
| 1107310-125 | .140 (3.6) | .350 (8.9) | -          | 1.5 (38.1) | .125 (3.2) |

Standard Colors: Black or natural (Off-White)  
RP-250 Spring Pins furnished, see page 23.  
Note: Flanges converge slightly.

### 1209 Series

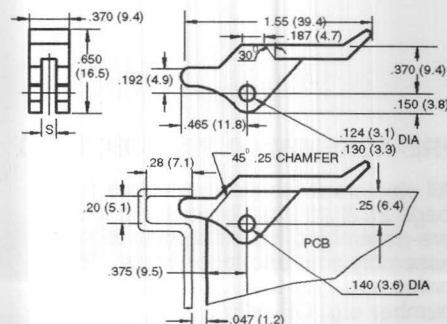
**94V-2**

U.L. RATED MATERIAL

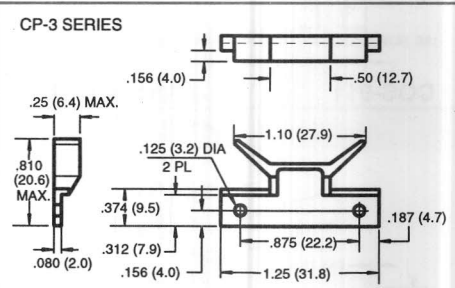
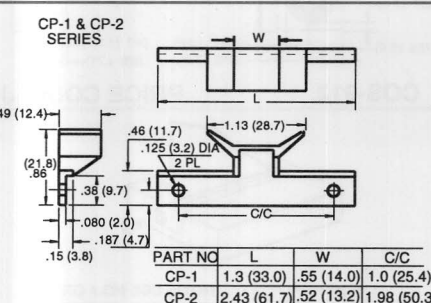
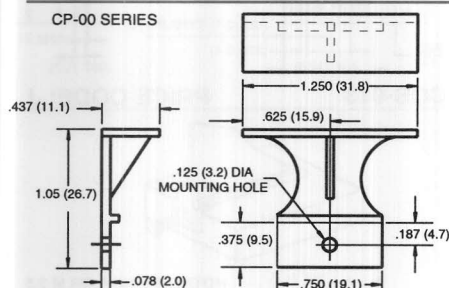
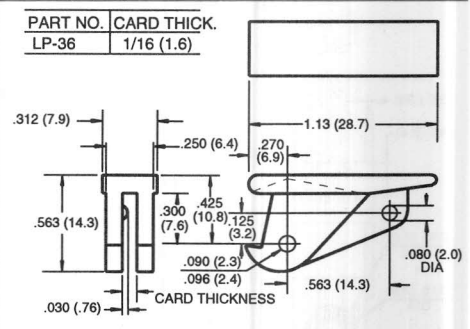
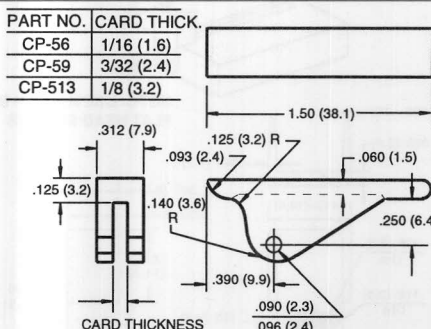
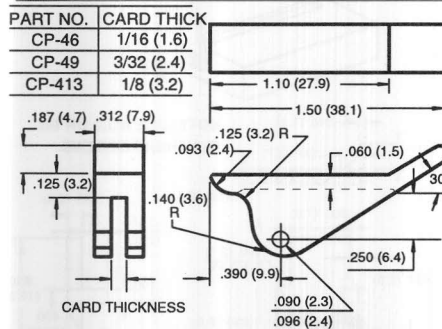
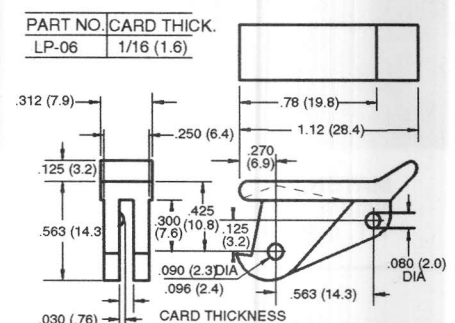
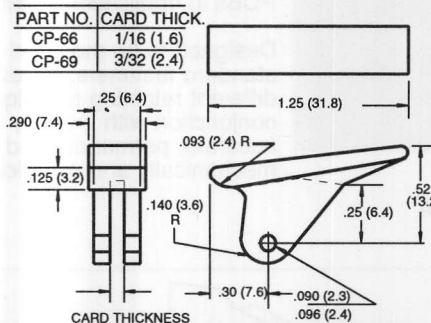
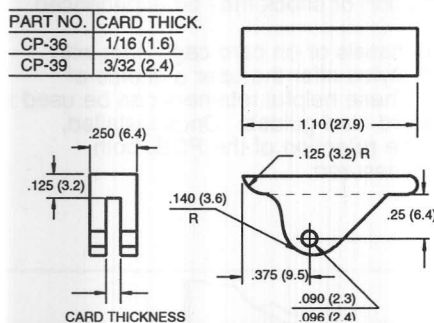
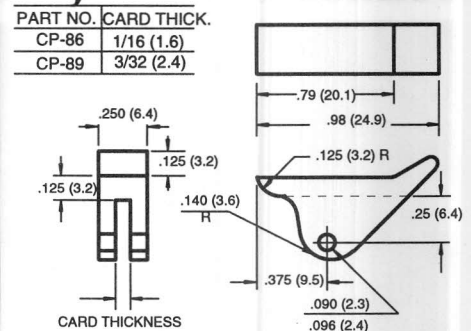
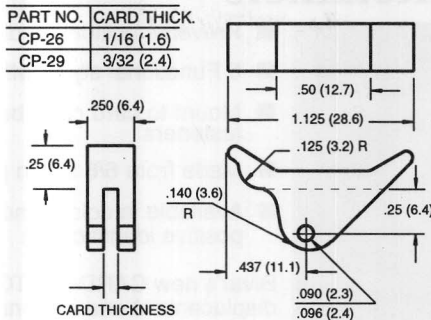
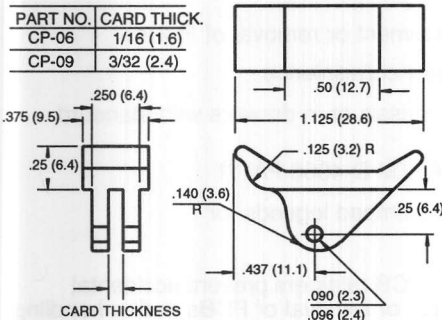
| DESC DWG  | BIVAR NO. |
|-----------|-----------|
| 83023-19W | 1209-062  |
| 83023-20W | 1209-093  |
| 83023-21W | 1209-125  |

| Part No. | S          | PCB        |
|----------|------------|------------|
| 1209-062 | .075 (1.9) | .062 (1.6) |
| 1209-093 | .100 (2.5) | .093 (2.4) |
| 1209-125 | .140 (3.6) | .125 (3.2) |

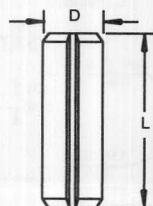
Standard Color: Natural.  
RP-375 Spring Pins Furnished (see page 23)  
Note: Flanges converge slightly.



## Printed Circuit Board Card Ejectors & Handles



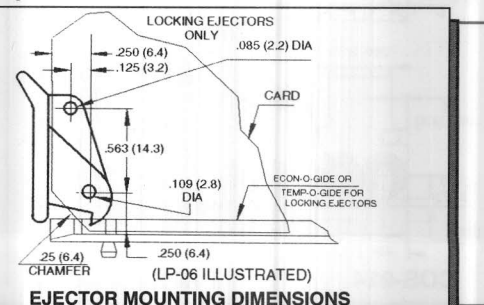
FURNISHED WITH EACH EJECTOR OR INSERTER/EXTRACTOR



PASSIVATED STAINLESS STEEL SPRING PINS PER MIL-P-10971

| PART NO. | L          | D          |
|----------|------------|------------|
| RP-250*  | 1/4 (6.4)  | 3/32 (2.4) |
| RP-312   | 5/16 (8.0) | 3/32 (2.4) |
| RP-375   | 3/8 (9.5)  | 1/8 (3.2)  |

\* WORKS WITH THE CPT-1



EJECTOR MOUNTING DIMENSIONS

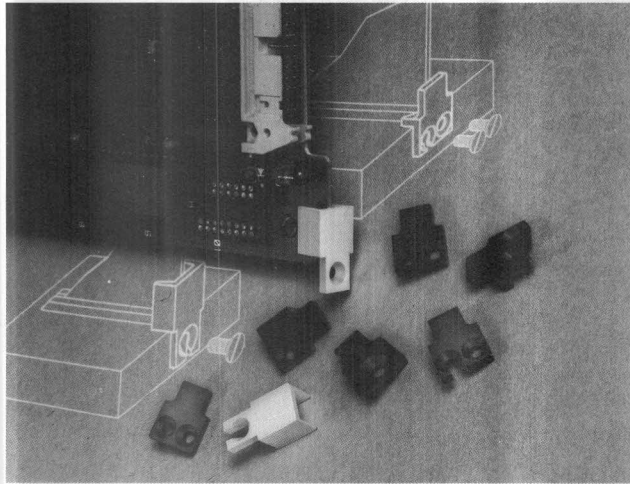
# CARD-O-STOP™

**94V-2**

U.L. RATED MATERIAL

**Bivar**

## Printed Circuit Board Retainers



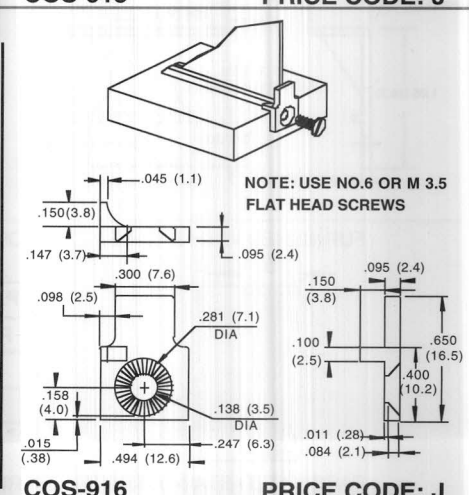
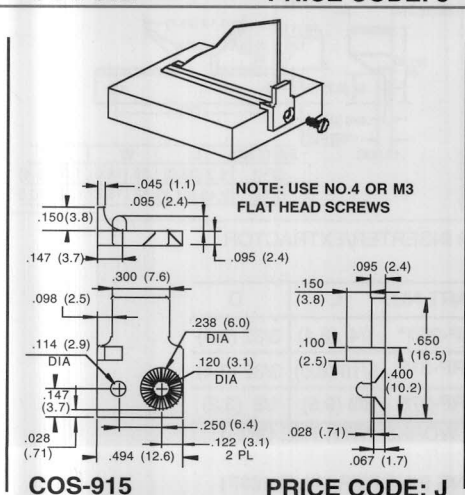
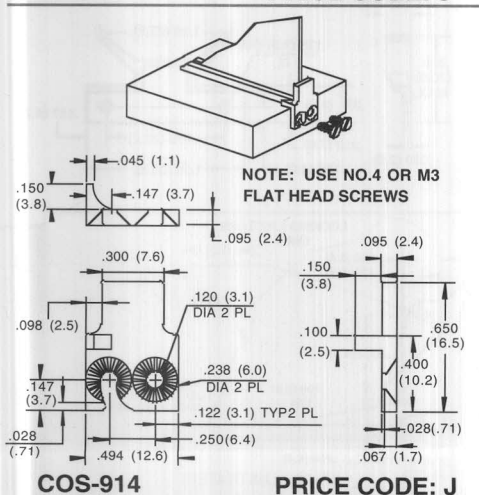
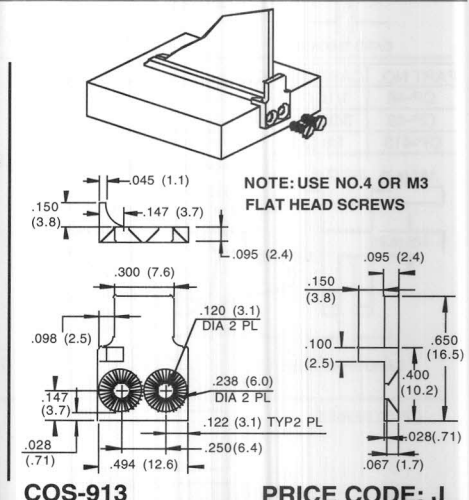
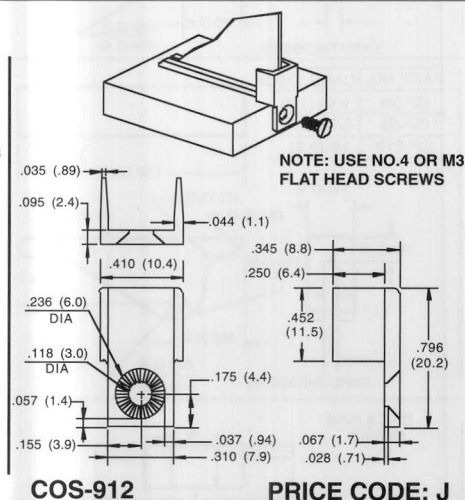
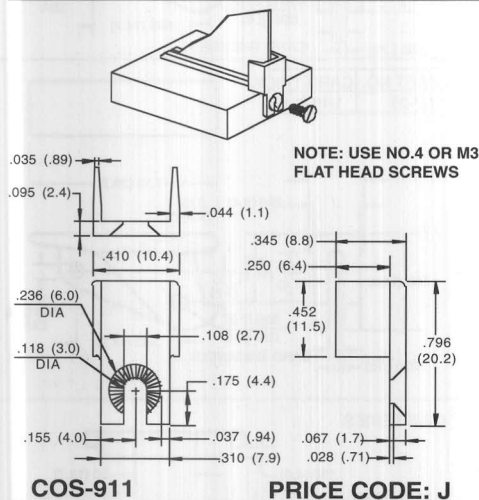
- Prevents accidental displacement or removal of PCBs
- 6 Functional styles offer user convenience
- Mount to card cage bars, chassis or in drawers with standard fasteners
- Made from 6/6 Nylon per ASTM D-4066 PA111
- Available in colors and hot stamped legends for positive identification

Bivar's new CARD-O-STOP™ PCB retainers prevent accidental displacement and disconnection or removal of PCBs during handling or shipment, and are an excellent means of assuring retention of PCBs in application where vibration or shock may be experienced.

Designed to be mounted on a chassis or on card cage bars with standard fasteners, six distinct styles offer the user a choice of different retaining techniques. These helpful retainers can be used in conjunction with industry standard card guides. Once installed, accurate, permanent and positive retention of the PCB, both mechanically and electrically, is assured.

### MATERIAL SPECIFICATIONS:

Natural 6/6 Nylon per ASTM D-4066, PA 111, material rated 94V-2 by U.L.



REFER TO PAGE 45 FOR COMPLETE SPECIFICATIONS AND TOLERANCES

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BIVAR, INC. • 4 THOMAS • IRVINE, CA 92718-2593



# CONNECTOR CUTOUT COVERS

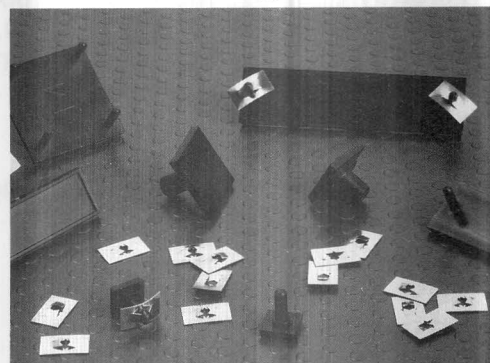
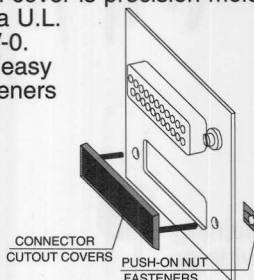
## For "D" Subminiature, Microribbon, "D" Hole & Flange Mounted Ports

- Twenty (20) standard sizes and styles
- Precision molded from black ABS, U.L. rated 94V-0 material
- Fast, easy assembly with push-on nut fasteners furnished with each cover
- Provides attractive finish to panels
- Available from stock

**MATERIAL SPECIFICATIONS**  
Fastening devices supplied with each cover.  
ABS, U.L. Rated 94V-0 material  
Color: Black

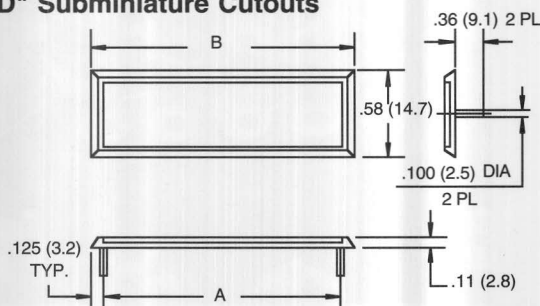
Available in twenty (20) standard sizes and styles, these new BIVAR Connector Cutout Covers provide a cost-effective solution for covering cutouts and ports for "D" subminiature, Microribbon, D Hole and Flange Mounted Connectors.

Designed to blend attractively while serving a functional value, each cover is precision molded from Black ABS with a U.L. material rating of 94V-0. Assembly is fast and easy with push-on nut fasteners which are provided with each cover.



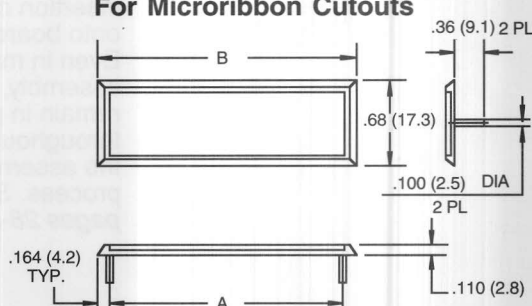
**STANDARD DRAWING TOLERANCES**  
All dimensions shown in inches  
.XX ± .010 (.254)  
.XXX ± .005 (.127)

### SERIES 10 For "D" Subminiature Cutouts



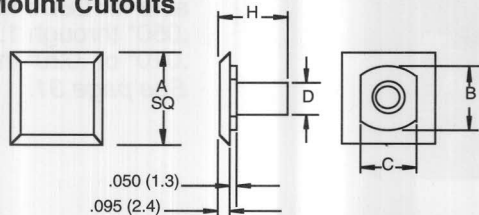
| PART NO. | A DIM        | B DIM.      | PRICE CODE |
|----------|--------------|-------------|------------|
| 10-9     | .984 (25.0)  | 1.23 (31.2) | BB         |
| 10-15    | 1.312 (33.3) | 1.56 (39.6) | DD         |
| 10-25    | 1.852 (47.0) | 2.10 (53.3) | FF         |
| 10-37    | 2.500 (63.5) | 2.75 (69.9) | HH         |
| 10-50    | 2.406 (61.1) | 2.66 (67.6) | JJ         |

### SERIES 12 For Microribbon Cutouts



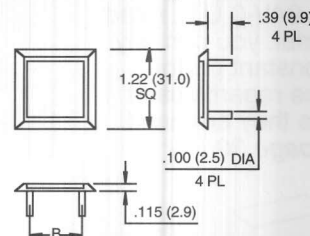
| PART NO. | A DIM        | B DIM.       | PRICE CODE |
|----------|--------------|--------------|------------|
| 12-14R   | 1.417 (36.0) | 1.745 (44.3) | FF         |
| 12-24R   | 1.842 (46.8) | 2.170 (55.1) | GG         |
| 12-36R   | 2.352 (59.7) | 2.680 (68.1) | JJ         |
| 12-50R   | 2.947 (74.9) | 3.275 (83.2) | KK         |
| 12-64R   | 3.542 (90.0) | 3.875 (98.4) | MM         |

### SERIES 14 For "D" Hole Mount Cutouts



| PART NO. | A DIM.      | B.DIM       | C DIM.      | D DIM      | H. DIM.    | TYPE        | PRICE CODE |
|----------|-------------|-------------|-------------|------------|------------|-------------|------------|
| 14-11    |             | .187 (4.7)  | .155 (3.9)  |            |            | SMC         | AA         |
| 14-12    | .375 (9.5)  | .245 (6.2)  | .215 (5.5)  | .125 (3.2) |            | MINI COAX.  | AA         |
| 14-13    | sq.         | .276 (7.0)  | .235 (6.0)  |            |            | SMC.M.COAX. | AA         |
| 14-21    |             | .360 (9.1)  | .310 (7.9)  |            | .47 (11.9) | TNC,BNC     | CC         |
| 14-22    | .625 (15.9) | .430 (10.9) | .375 (9.5)  |            |            | TNC,COAX    | CC         |
| 14-23    | sq.         | .495 (12.6) | .430 (10.9) | .250 (6.4) |            | BNC. SHV    | CC         |
| 14-31    | .812 (20.6) | .625 (15.9) | .520 (13.2) |            | .58 (14.7) | N SERIES    | EE         |
| 14-32    | sq.         | .750 (19.1) | .630 (16.0) |            |            | TWIN VIDEO  | EE         |

### SERIES 16 For Flange Mount Receptacle Cutouts

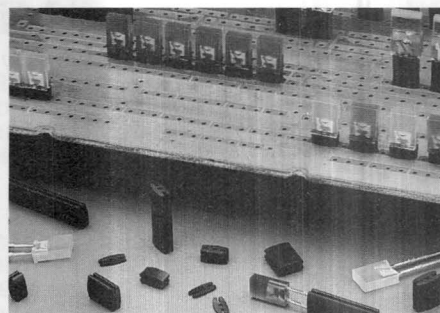
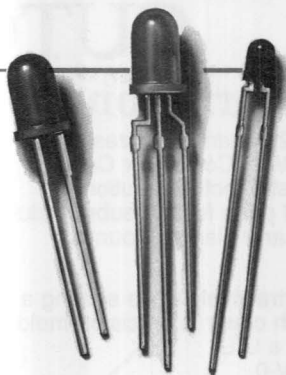


| PART NO. | B DIM.      | SHELL SIZE | PRICE CODE |
|----------|-------------|------------|------------|
| 16-41    | .906 (23.0) | 14, 15     | LL         |
| 16-42    | .969 (24.6) | 16, 17     | LL         |

FASTENERS SUPPLIED  
WITH EACH COVER

# LED Mounts, Holders & Panel Clips

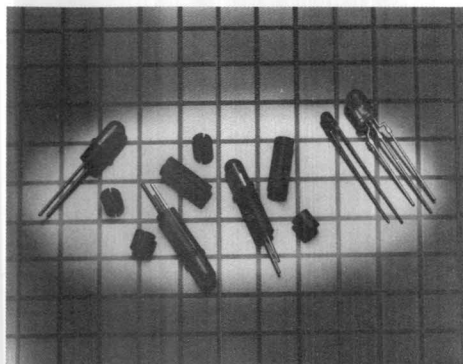
Already offering industry's largest selection of versatile LED mounts, providing low-cost, quality answers to the exploding use of LEDs in thousands of applications. Bivar introduces a host of new LED mounting products on the following pages.



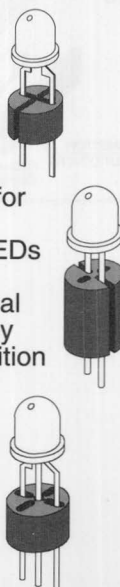
## New Self-Retaining Advantages

### Extruded LED Mounts

Bivar's new LED Mounts introduce self-retaining designs to make handling easier and provide an

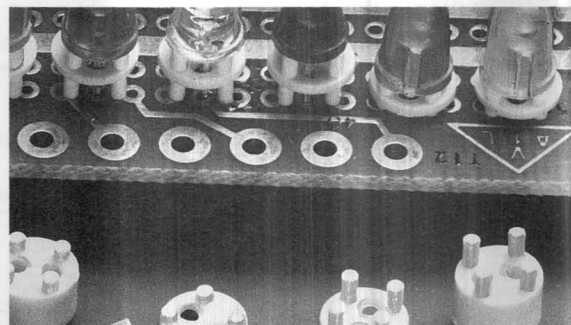
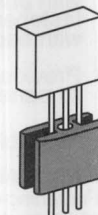


ideal answer for automatic insertion of LEDs onto boards. Even in manual assembly, they remain in position throughout the assembly process. See pages 28-29.



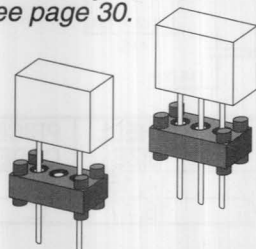
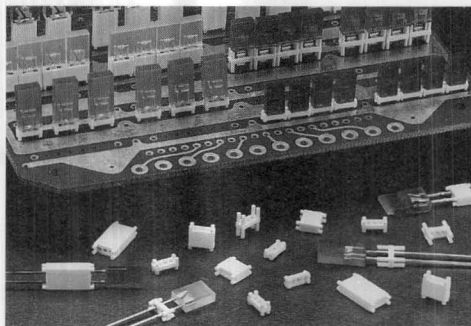
### Extruded Rectangular Mounts

Bivar's new ERM Extruded LED Mounts are designed to allow assembly with industry's popular LED Rectangular styles, providing an excellent way to reduce cost and inventories. See pages 28-29.



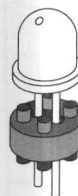
### Molded Rectangular LED Mounts

New designs also eliminate the hazards of shorted leads from occurring. Alignment and controlled elevation are assured. And because they are made from 94V-0 U.L. rated material, you can rely on constant performance regardless of where they are used. See page 30.



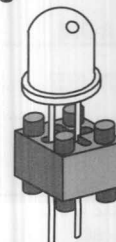
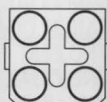
### T-1 3/4 Individual Molded LED Mounts

Recognizing a need for a cost-effective and accurate approach to mounting individual T-1 $\frac{3}{4}$  LEDs, 78 mounts are available as standard from stock. Different mounting heights are available for LEDs in heights of .050" through 1.080", in either .010" or .020" increments. See page 31.

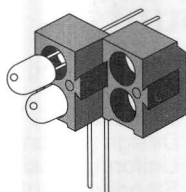


### T-1 or T-1 3/4 Individual Molded LED Mounts

Perfectly suited for in-line or across alignment of LEDs, these T-1 or T-1 $\frac{3}{4}$  Individual Mounts provide a simple, yet effective solution to accurate LED installation, while standoffs on both top and bottom allow for board washing and removal of soldering residue. See page 32.



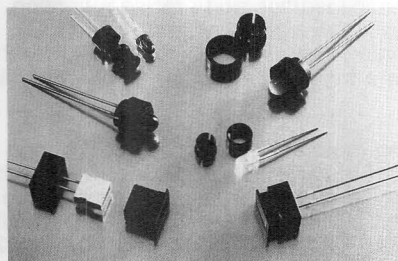
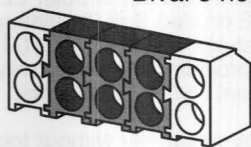
## LED Holders For Single & Bi-Level Mounting of Most LED Types



### LED Holders

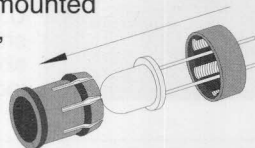
Now you can experience the freedom of combining any color, intensity or style LED into a mount or holder that answers your exact requirement. As an example,

Bivar's new 90° LED Holders provide a wide variety of single and bi-level elevations in interlocking stations which can be used individually or in arrays as you wish. See pages 36-41.

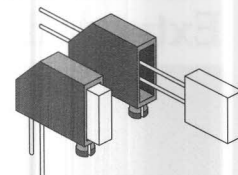


### Clips & Rings

Designed to provide an improved method of securely and uniformly mounting T-1 (3mm), T-1 $\frac{3}{4}$  (5mm), and Rectangular LEDs, these easy-to-use devices also protect and enhance panel mounted lighted displays, all at a low per station cost. See pages 42 and 43.



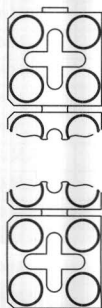
## Freedom To Combine Colors & Styles Reduce Inventory



Bivar's 90° LED Holders provide an immediate, low-cost answer to single and bi-level mountings for virtually all LED types. Colors and intensities can be combined. 54 versatile styles. A great idea to lower inventory requirements and make any combination of colors and intensities immediately available. See pages 36-41.

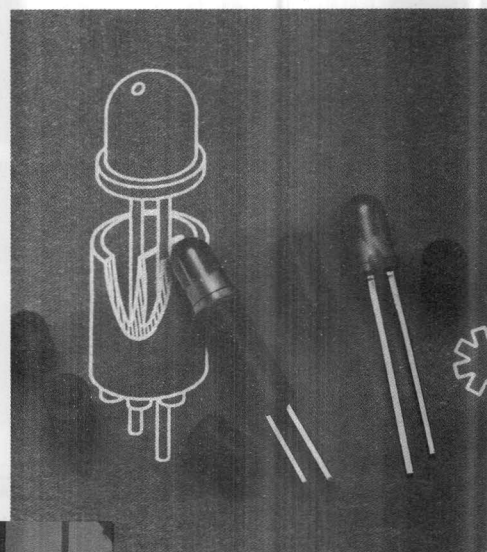
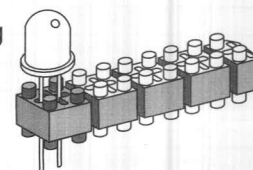
## Choose Your Style... From Stock.

Because all Bivar LED Mounts, Holders and Panel Clips are stocked in-depth, you can rely on immediate shipment anywhere in the world. And, because of their versatile design, you can reduce your own inventories since only a few styles are required to mount almost every standard LED. Whether Bivar's Stripmounts, individual stations, or arrays, they are available.



### Strip-Mounts

Molded in one-piece strips of 12 and 15 stations, these "Strip-Mounts" are designed for LED mounting on .200" (T-1) and .250" (T-1 $\frac{3}{4}$ ) spacing. A single strip can be used for an entire array. Or, couplings between individual mounts are easily cut, allowing the user to size arrays from 2 up to 12 or 15 stations. Assured elevation and evenly spaced applications include such areas as fault edges of PCBs or for flush panel displays. See page 33.



### LED Tubular Mounts

Self-Retaining Molded LED Mounts enable one universal style for both T-1 and T-1 $\frac{3}{4}$  LEDs, including an internal divider to prevent lead shorting. See page 34.



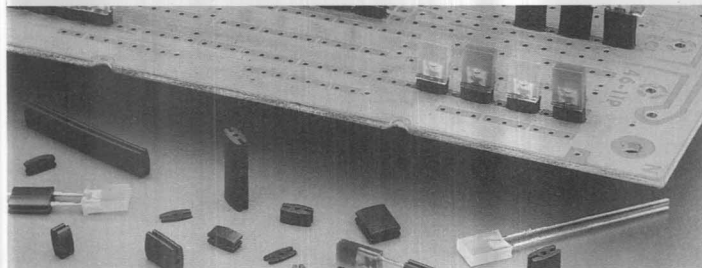
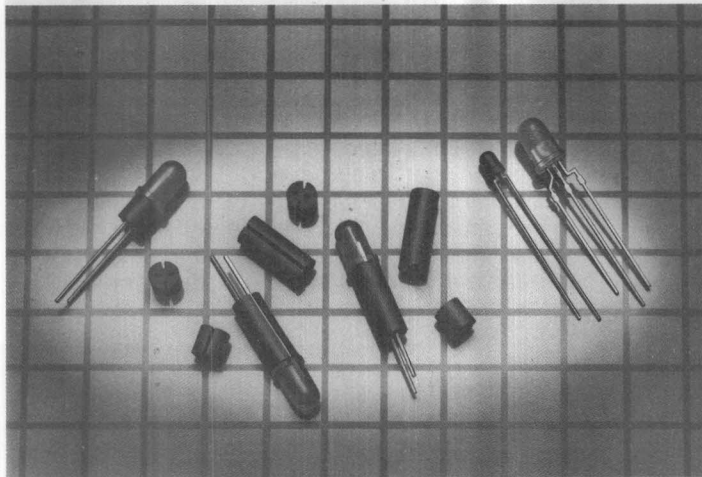


## PERM-O-PAD®

**94V-0**

U.L. RATED MATERIAL

### Extruded, Self-Retaining LED Mounts



- Self-Retaining features allow pre-assembly and automatic insertion.
- Styles for T-1, T-1½, T-1¾ (3 lead) and rectangular LEDs.
- Design prevents lead shorting.
- Uniform, consistently perpendicular mounting assured.
- Standard lengths from .030" - 1.250" (.76-31.8) in .005" (.127) increments.
- Symmetrical for assembly ease
- Made from U.L. rated 94V-0 Black PVC material.
- Low in cost and available from stock for immediate shipment.

Designed to allow assembly with industry's most popular LED styles, Bivar's ELM and ERM Series Extruded Self-Retaining LED Mounts are available in distinct styles to accept T-1, T-1½, T-1¾ (3 lead) and rectangular LEDs, providing excellent ways to reduce inventories of several different style LED mounts.

Their self-retaining design allows easy assembly without tools, while firmly retaining LEDs during handling and assembly steps. Ideal for automatic insertion and precise mounting, these mounts are virtually the same diameter as the LED, protect leads from shorting and assure uniform, consistent mounting of the LED in a truly perpendicular plane, regardless of LED type.

Capable of withstanding most environments, the ELM and ERM Series are made of Black PVC material rated 94V-0 by U.L. All standard sizes are stocked in depth for immediate shipment and are extremely low in cost. All styles are available in lengths from .030" - 1.250" (.76-31.8), in .005" (.127) increments.

#### MM CHART

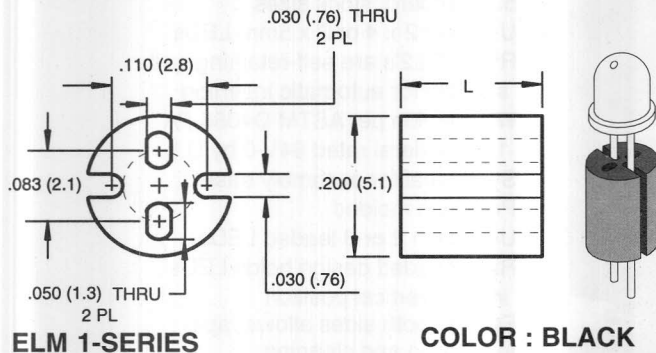
| MM | INCHES | PART NUMBERS | PRICE CODE | PART NUMBERS | PRICE CODE | PART NUMBERS | PRICE CODE | PART NUMBERS | PRICE CODE | PART NUMBERS | PRICE CODE |
|----|--------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|
| 1  | .039   | ELM 1-1MM    | V          | ELM 2-1MM    | U          | ELM 3-1MM    | W          | ELM 4-1MM    | U          | ERM 1-1MM    | U          |
| 2  | .079   | ELM 1-2MM    | V          | ELM 2-2MM    | U          | ELM 3-2MM    | W          | ELM 4-2MM    | U          | ERM 1-2MM    | U          |
| 3  | .118   | ELM 1-3MM    | W          | ELM 2-3MM    | V          | ELM 3-3MM    | W          | ELM 4-3MM    | V          | ERM 1-3MM    | V          |
| 4  | .158   | ELM 1-4MM    | X          | ELM 2-4MM    | W          | ELM 3-4MM    | X          | ELM 4-4MM    | W          | ERM 1-4MM    | W          |
| 5  | .197   | ELM 1-5MM    | X          | ELM 2-5MM    | W          | ELM 3-5MM    | X          | ELM 4-5MM    | W          | ERM 1-5MM    | W          |
| 6  | .236   | ELM 1-6MM    | Y          | ELM 2-6MM    | X          | ELM 3-6MM    | Y          | ELM 4-6MM    | X          | ERM 1-6MM    | X          |
| 7  | .276   | ELM 1-7MM    | Y          | ELM 2-7MM    | X          | ELM 3-7MM    | Y          | ELM 4-7MM    | X          | ERM 1-7MM    | X          |
| 8  | .315   | ELM 1-8MM    | Z          | ELM 2-8MM    | Y          | ELM 3-8MM    | Z          | ELM 4-8MM    | Y          | ERM 1-8MM    | Y          |
| 9  | .354   | ELM 1-9MM    | Z          | ELM 2-9MM    | Y          | ELM 3-9MM    | Z          | ELM 4-9MM    | Y          | ERM 1-9MM    | Y          |
| 10 | .394   | ELM 1-10MM   | ZZ         | ELM 2-10MM   | Z          | ELM 3-10MM   | ZZ         | ELM 4-10MM   | Z          | ERM 1-10MM   | Z          |
| 11 | .433   | ELM 1-11MM   | ZZ         | ELM 2-11MM   | Z          | ELM 3-11MM   | ZZ         | ELM 4-11MM   | Z          | ERM 1-11MM   | Z          |
| 12 | .472   | ELM 1-12MM   | ZZ         | ELM 2-12MM   | Z          | ELM 3-12MM   | ZZ         | ELM 4-12MM   | Z          | ERM 1-12MM   | Z          |
| 13 | .512   | ELM 1-13MM   | ZZZ        | ELM 2-13MM   | ZZ         | ELM 3-13MM   | ZZZ        | ELM 4-13MM   | ZZ         | ERM 1-13MM   | ZZ         |
| 14 | .551   | ELM 1-14MM   | ZZZ        | ELM 2-14MM   | ZZ         | ELM 3-14MM   | ZZZ        | ELM 4-14MM   | ZZ         | ERM 1-14MM   | ZZ         |
| 15 | .591   | ELM 1-15MM   | ZZZ        | ELM 2-15MM   | ZZ         | ELM 3-15MM   | ZZZ        | ELM 4-15MM   | ZZ         | ERM 1-15MM   | ZZ         |
| 16 | .630   | ELM 1-16MM   | ZZZ        | ELM 2-16MM   | ZZ         | ELM 3-16MM   | ZZZ        | ELM 4-16MM   | ZZ         | ERM 1-16MM   | ZZ         |
| 17 | .669   | ELM 1-17MM   | ZZZ        | ELM 2-17MM   | ZZ         | ELM 3-17MM   | ZZZ        | ELM 4-17MM   | ZZ         | ERM 1-17MM   | ZZ         |
| 18 | .709   | ELM 1-18MM   | ZZZ        | ELM 2-18MM   | ZZ         | ELM 3-18MM   | ZZZ        | ELM 4-18MM   | ZZ         | ERM 1-18MM   | ZZ         |
| 19 | .748   | ELM 1-19MM   | ZZZ        | ELM 2-19MM   | ZZ         | ELM 3-19MM   | ZZZ        | ELM 4-19MM   | ZZ         | ERM 1-19MM   | ZZ         |
| 20 | .787   | ELM 1-20MM   | ZZZZ       | ELM 2-20MM   | ZZZZ       | ELM 3-20MM   | ZZZZ       | ELM 4-20MM   | ZZZZ       | ERM 1-20MM   | ZZZZ       |
| 21 | .827   | ELM 1-21MM   | ZZZZ       | ELM 2-21MM   | ZZZZ       | ELM 3-21MM   | ZZZZ       | ELM 4-21MM   | ZZZZ       | ERM 1-21MM   | ZZZZ       |
| 22 | .886   | ELM 1-22MM   | ZZZZ       | ELM 2-22MM   | ZZZZ       | ELM 3-22MM   | ZZZZ       | ELM 4-22MM   | ZZZZ       | ERM 1-22MM   | ZZZZ       |
| 23 | .906   | ELM 1-23MM   | ZZZZ       | ELM 2-23MM   | ZZZZ       | ELM 3-23MM   | ZZZZ       | ELM 4-23MM   | ZZZZ       | ERM 1-23MM   | ZZZZ       |
| 24 | .945   | ELM 1-24MM   | ZZZZ       | ELM 2-24MM   | ZZZZ       | ELM 3-24MM   | ZZZZ       | ELM 4-24MM   | ZZZZ       | ERM 1-24MM   | ZZZZ       |
| 25 | .984   | ELM 1-25MM   | ZZZZ       | ELM 2-25MM   | ZZZZ       | ELM 3-25MM   | ZZZZ       | ELM 4-25MM   | ZZZZ       | ERM 1-25MM   | ZZZZ       |
| 26 | 1.024  | ELM 1-26MM   | ZZZZ       | ELM 2-26MM   | ZZZZ       | ELM 3-26MM   | ZZZZ       | ELM 4-26MM   | ZZZZ       | ERM 1-26MM   | ZZZZ       |

NOTE: MM is used rather than mm for millimeter(s) for computer compatibility.

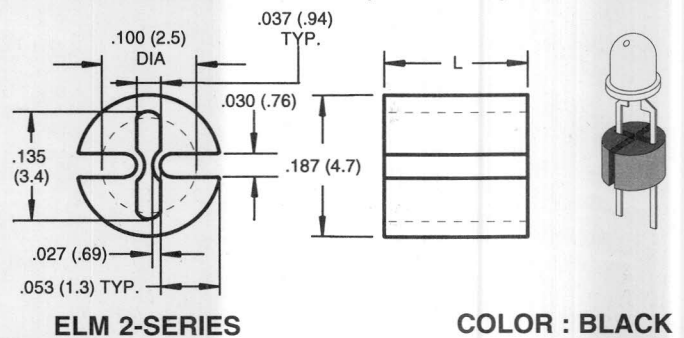
CAGE CODE (FSCM 32559) © COPYRIGHT 1994, BIVAR, INC.  
BIVAR, INC. • 4 THOMAS • IRVINE, CA 92718-2593

## Extruded, Self-Retaining LED Mounts

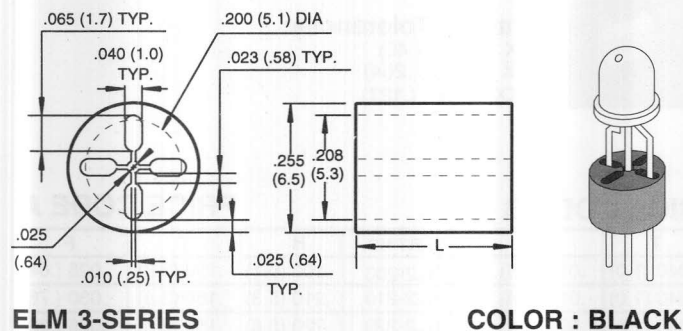
### T-1 3/4 LED MOUNT - 2 LEADS



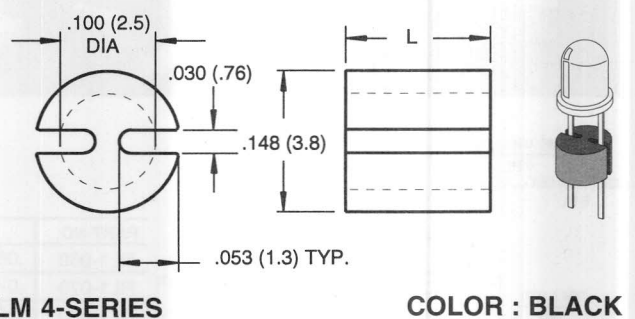
### T-1 LED MOUNT (.187 DIA)



### T-1 3/4 LED MOUNT - 3 LEADS

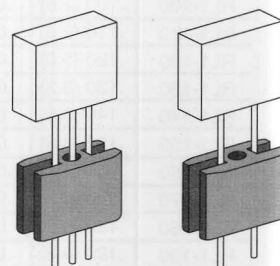
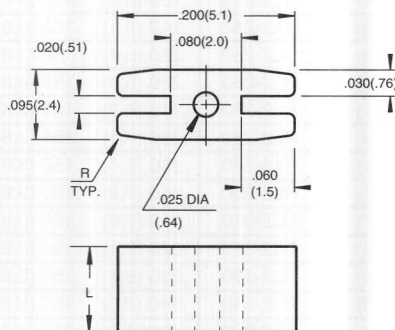


### T-1 LED MOUNT (.148 DIA)



**94V-0**  
U.L. RATED MATERIAL

**94V-0**  
U.L. RATED MATERIAL



USE WITH RECTANGULAR LEDs  
RECOMMENDED  
TYPE: 2X4mm OR 2X5mm,  
2 OR 3 LEADED

### PRICE CODES

| PART NO. | LED TYPE    | LEADS NO. | "L" DIMENSIONS        |
|----------|-------------|-----------|-----------------------|
| ELM 1-   | T-1 3/4     | 2         | .030-1.250 (.76-31.8) |
| ELM 2-   | T-1         | 2         | .030-1.250 (.76-31.8) |
| ELM 3-   | T-1 3/4     | 3         | .030-1.250 (.76-31.8) |
| ELM 4-   | T-1         | 2         | .030-1.250 (.76-31.8) |
| ERM 1-   | RECTANGULAR | 2 OR 3    | .030-1.250 (.76-31.8) |

Tolerances: O.D.  $\pm .005$  (.13), I.D.  $\pm .005$  (.13)  
 "L" Dim: .030 -.500 (.76-12.7) is  $\pm .005$  (.13)  
 "L" Dim: .505 -.750 (12.8-19.1) is  $\pm .008$  (.20)  
 "L" Dim: .755 -1.250 (19.2-21.8) is  $\pm .015$  (.38)

| "L" DIMENSIONS         | ELM 1 | ELM 2 & ELM 4 & ERM 1 | ELM 3 |
|------------------------|-------|-----------------------|-------|
| .030-.075 (.76-1.9)    | V     | U                     | W     |
| .080-.150 (2.0-3.8)    | W     | V                     | W     |
| .155-.230 (4.0-5.8)    | X     | W                     | X     |
| .235-.310 (6.0-7.9)    | Y     | X                     | Y     |
| .315-.380 (8.0-9.7)    | Z     | Y                     | Z     |
| .385-.495 (9.8-12.6)   | ZZ    | Z                     | ZZ    |
| .500-.750 (12.7-19.1)  | ZZZ   | ZZZ                   | ZZZ   |
| .755-1.250 (19.2-31.8) | ZZZZ  | ZZZZ                  | ZZZZ  |

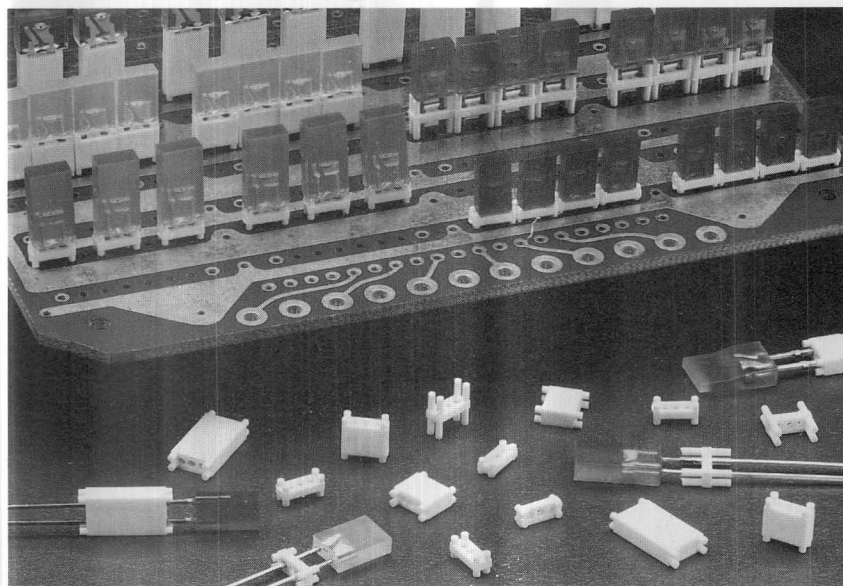
EXAMPLES: ELM 3-050 is price code W ELM 1-240 is price code Y  
 ELM 1-410 is price code ZZ ELM 3-700 is price code ZZZ  
 ERM 1-400 is price code Z

# PERM-O-PAD®

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

## Molded Rectangular LED Mounts (RL SERIES)

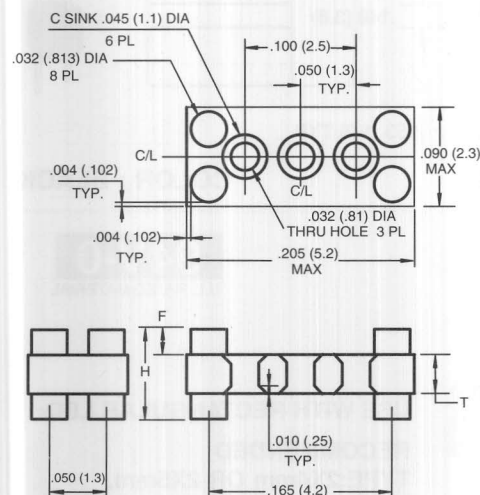


- 53 Standard, stock sizes
- Use with 2 x 4 or 2 x 5mm LEDs
- RL1 & RL2's are self-retaining and suitable for automatic insertion
- White nylon per ASTM D4066 PA 111; material rated 94V-0 by U.L.
- Symmetrical for assembly ease
- Precision molded
- Used with 2 or 3 leaded LEDs
- Rigid molded design holds LEDs in truly vertical position
- Feet on both sides allows rapid inspection and cleaning

**Material:** White nylon per ASTM D-4066 PA111 U.L. rated 94V-0

### Drawing Tolerances:

.X  $\pm 1/64$  (.40)  
.XX  $\pm .010$  (.254)  
.XXX  $\pm .005$  (.127)



### PRICE CODE B

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| RL1-060  | .060 (1.5) | .040 (1.0) | .010 (.25) |
| RL1-070  | .070 (1.8) | .040 (1.0) | .015 (.38) |
| RL1-080  | .080 (2.0) | .040 (1.0) | .020 (.51) |
| RL1-090  | .090 (2.3) | .040 (1.0) | .025 (.64) |
| RL1-100  | .100 (2.5) | .040 (1.0) | .030 (.76) |
| RL1-110  | .110 (2.8) | .040 (1.0) | .035 (.89) |
| RL1-120  | .120 (3.0) | .040 (1.0) | .040 (1.0) |
| RL1-130  | .130 (3.3) | .040 (1.0) | .045 (1.1) |
| RL1-140  | .140 (3.6) | .040 (1.0) | .050 (1.3) |
| RL1-150  | .150 (3.8) | .040 (1.0) | .055 (1.4) |
| RL1-160  | .160 (4.1) | .040 (1.0) | .060 (1.5) |
| RL1-170  | .170 (4.3) | .040 (1.0) | .065 (1.7) |
| RL1-180  | .180 (4.6) | .040 (1.0) | .070 (1.8) |
| RL1-190  | .190 (4.8) | .040 (1.0) | .075 (1.9) |
| RL1-200  | .200 (5.1) | .040 (1.0) | .080 (2.0) |
| RL1-210  | .210 (5.3) | .040 (1.0) | .085 (2.2) |

### PRICE CODE A

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| RL2-200  | .200 (5.1) | .150 (3.8) | .025 (.64) |
| RL2-210  | .210 (5.3) | .150 (3.8) | .030 (.76) |
| RL2-220  | .220 (5.6) | .150 (3.8) | .035 (.89) |
| RL2-230  | .230 (5.8) | .150 (3.8) | .040 (1.0) |
| RL2-240  | .240 (6.1) | .150 (3.8) | .045 (1.1) |
| RL2-250  | .250 (6.4) | .150 (3.8) | .050 (1.3) |
| RL2-260  | .260 (6.6) | .150 (3.8) | .055 (1.4) |
| RL2-270  | .270 (6.9) | .150 (3.8) | .060 (1.5) |
| RL2-280  | .280 (7.1) | .150 (3.8) | .065 (1.7) |
| RL2-290  | .290 (7.4) | .150 (3.8) | .070 (1.8) |
| RL2-300  | .300 (7.6) | .150 (3.8) | .075 (1.9) |
| RL2-310  | .310 (7.9) | .150 (3.8) | .080 (2.0) |
| RL2-320  | .320 (8.1) | .150 (3.8) | .085 (2.2) |
| RL2-330  | .330 (8.4) | .150 (3.8) | .090 (2.3) |
| RL2-340  | .340 (8.6) | .150 (3.8) | .095 (2.4) |
| RL2-350  | .350 (8.9) | .150 (3.8) | .100 (2.5) |

### PRICE CODE G

| PART NO. | H           | T          | F          |
|----------|-------------|------------|------------|
| RL3-360  | .360 (9.1)  | .340 (8.6) | .010 (.25) |
| RL3-380  | .380 (9.7)  | .340 (8.6) | .020 (.51) |
| RL3-400  | .400 (10.2) | .340 (8.6) | .030 (.76) |
| RL3-420  | .420 (10.7) | .340 (8.6) | .040 (1.0) |
| RL3-440  | .440 (11.2) | .340 (8.6) | .050 (1.3) |
| RL3-460  | .460 (11.7) | .340 (8.6) | .060 (1.5) |
| RL3-480  | .480 (12.2) | .340 (8.6) | .070 (1.8) |
| RL3-500  | .500 (12.7) | .340 (8.6) | .080 (2.0) |
| RL3-520  | .520 (13.2) | .340 (8.6) | .090 (2.3) |
| RL3-540  | .540 (13.7) | .340 (8.6) | .100 (2.5) |

### PRICE CODE H

| PART NO. | H           | T           | F          |
|----------|-------------|-------------|------------|
| RL4-560  | .560 (14.2) | .540 (13.7) | .010 (.25) |
| RL4-580  | .580 (14.7) | .540 (13.7) | .020 (.51) |
| RL4-600  | .600 (15.2) | .540 (13.7) | .030 (.76) |
| RL4-620  | .620 (15.7) | .540 (13.7) | .040 (1.0) |
| RL4-640  | .640 (16.3) | .540 (13.7) | .050 (1.3) |
| RL4-660  | .660 (16.8) | .540 (13.7) | .060 (1.5) |
| RL4-680  | .680 (17.3) | .540 (13.7) | .070 (1.8) |
| RL4-700  | .700 (17.8) | .540 (13.7) | .080 (2.0) |
| RL4-720  | .720 (18.3) | .540 (13.7) | .090 (2.3) |
| RL4-730  | .730 (18.5) | .540 (13.7) | .095 (2.4) |
| RL4-740  | .740 (18.8) | .540 (13.7) | .100 (2.5) |

**USE WITH:**  
2 x 4 or 2 x 5mm LEDs



## Molded T-1¾ Individual LED Mounts

Recognizing a need for a cost-effective and accurate approach to mounting individual T-1¾ LEDs, 78 mounts are available as standard from stock.

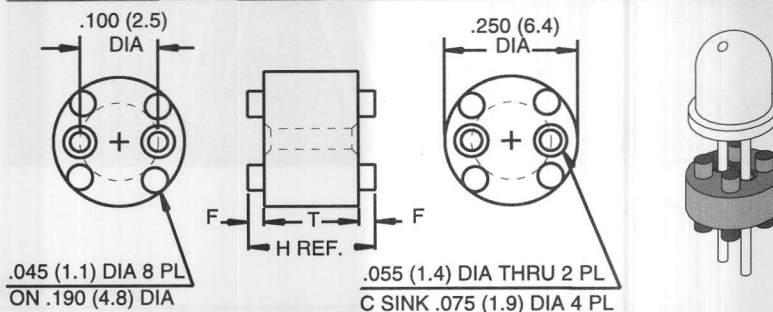
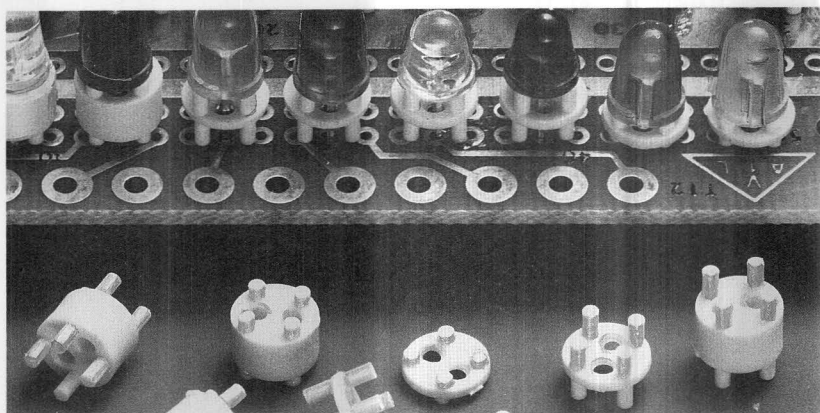
Different mounting heights are available for LEDs in heights of .050" through 1.080", in either .010" or .020" increments.

This simple, yet effective style is symmetrical, providing funnel shaped lead entry holes for assembly ease. Standoffs on both top and bottom allow room for proper filletting, inspection ease, thorough cleaning and heat dissipation.

All of these new mounts, available directly from stock are molded from NYLON per ASTM D4066 PA111 with a U.L. material rating of 94V-2.

Parts are totally symmetrical and have funnel shaped lead entry holes for easy inspection and assembly.

Posts on tops and feet on bottoms facilitate cleaning and inspection.



### PRICE CODE A

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 450-050  | .050 (1.3) | .030 (.76) | .010 (.25) |
| 450-060  | .060 (1.5) | .030 (.76) | .015 (.38) |
| 450-070  | .070 (1.8) | .030 (.76) | .020 (.51) |
| 450-080  | .080 (2.0) | .030 (.76) | .025 (.64) |
| 450-090  | .090 (2.3) | .030 (.76) | .030 (.76) |
| 450-100  | .100 (2.5) | .030 (.76) | .035 (.89) |
| 450-110  | .110 (2.8) | .030 (.76) | .040 (1.0) |
| 450-120  | .120 (3.0) | .030 (.76) | .045 (1.1) |
| 450-130  | .130 (3.3) | .030 (.76) | .050 (1.3) |
| 450-140  | .140 (3.6) | .030 (.76) | .055 (1.4) |
| 450-150  | .150 (3.8) | .030 (.76) | .060 (1.5) |
| 450-160  | .160 (4.1) | .030 (.76) | .065 (1.7) |
| 450-170  | .170 (4.3) | .030 (.76) | .070 (1.8) |
| 450-180  | .180 (4.6) | .030 (.76) | .075 (1.9) |
| 450-190  | .190 (4.8) | .030 (.76) | .080 (2.0) |
| 450-200  | .200 (5.1) | .030 (.76) | .085 (2.2) |

### PRICE CODE A

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 455-200  | .200 (5.1) | .150 (3.8) | .025 (.64) |
| 455-210  | .210 (5.3) | .150 (3.8) | .030 (.76) |
| 455-220  | .220 (5.6) | .150 (3.8) | .035 (.89) |
| 455-230  | .230 (5.8) | .150 (3.8) | .040 (1.0) |
| 455-240  | .240 (6.1) | .150 (3.8) | .045 (1.1) |
| 455-250  | .250 (6.4) | .150 (3.8) | .050 (1.3) |
| 455-260  | .260 (6.6) | .150 (3.8) | .055 (1.4) |
| 455-270  | .270 (6.9) | .150 (3.8) | .060 (1.5) |
| 455-280  | .280 (7.1) | .150 (3.8) | .065 (1.7) |
| 455-290  | .290 (7.4) | .150 (3.8) | .070 (1.8) |
| 455-300  | .300 (7.6) | .150 (3.8) | .075 (1.9) |
| 455-310  | .310 (7.9) | .150 (3.8) | .080 (2.0) |
| 455-320  | .320 (8.1) | .150 (3.8) | .085 (2.2) |
| 455-330  | .330 (8.4) | .150 (3.8) | .090 (2.3) |
| 455-340  | .340 (8.6) | .150 (3.8) | .095 (2.4) |
| 455-350  | .350 (8.9) | .150 (3.8) | .100 (2.5) |

### PRICE CODE B

| PART NO. | H           | T          | F          |
|----------|-------------|------------|------------|
| 456-350  | .350 (8.9)  | .300 (.76) | .025 (.64) |
| 456-360  | .360 (9.1)  | .300 (.76) | .030 (.76) |
| 456-370  | .370 (9.4)  | .300 (.76) | .035 (.89) |
| 456-380  | .380 (9.7)  | .300 (.76) | .040 (1.0) |
| 456-390  | .390 (9.9)  | .300 (.76) | .045 (1.1) |
| 456-400  | .400 (10.2) | .300 (.76) | .050 (1.3) |
| 456-410  | .410 (10.4) | .300 (.76) | .055 (1.4) |
| 456-420  | .420 (10.7) | .300 (.76) | .060 (1.5) |
| 456-430  | .430 (10.9) | .300 (.76) | .065 (1.7) |
| 456-440  | .440 (11.2) | .300 (.76) | .070 (1.8) |
| 456-450  | .450 (11.4) | .300 (.76) | .075 (1.9) |
| 456-460  | .460 (11.7) | .300 (.76) | .080 (2.0) |
| 456-470  | .470 (11.9) | .300 (.76) | .085 (2.2) |
| 456-480  | .480 (12.2) | .300 (.76) | .090 (2.3) |
| 456-490  | .490 (12.4) | .300 (.76) | .095 (2.4) |
| 456-500  | .500 (12.7) | .300 (.76) | .100 (2.5) |

### PRICE CODE F

| PART NO. | H           | T           | F          |
|----------|-------------|-------------|------------|
| 457-510  | .510 (13.0) | .490 (12.4) | .010 (.25) |
| 457-530  | .530 (13.5) | .490 (12.4) | .020 (.51) |
| 457-550  | .550 (14.0) | .490 (12.4) | .030 (.76) |
| 457-570  | .570 (14.5) | .490 (12.4) | .040 (1.0) |
| 457-590  | .590 (15.0) | .490 (12.4) | .050 (1.3) |
| 457-610  | .610 (15.5) | .490 (12.4) | .060 (1.5) |
| 457-630  | .630 (16.0) | .490 (12.4) | .070 (1.8) |
| 457-650  | .650 (16.5) | .490 (12.4) | .080 (2.0) |
| 457-670  | .670 (17.0) | .490 (12.4) | .090 (2.3) |
| 457-690  | .690 (17.5) | .490 (12.4) | .100 (2.5) |

### PRICE CODE G

| PART NO. | H           | T           | F          |
|----------|-------------|-------------|------------|
| 458-700  | .700 (17.8) | .680 (17.3) | .010 (.25) |
| 458-720  | .720 (18.3) | .680 (17.3) | .020 (.51) |
| 458-740  | .740 (18.8) | .680 (17.3) | .030 (.76) |
| 458-760  | .760 (19.3) | .680 (17.3) | .040 (1.0) |
| 458-780  | .780 (19.8) | .680 (17.3) | .050 (1.3) |
| 458-800  | .800 (20.3) | .680 (17.3) | .060 (1.5) |
| 458-820  | .820 (20.8) | .680 (17.3) | .070 (1.8) |
| 458-840  | .840 (21.3) | .680 (17.3) | .080 (2.0) |
| 458-860  | .860 (21.8) | .680 (17.3) | .090 (2.3) |
| 458-880  | .880 (22.4) | .680 (17.3) | .100 (2.5) |

### PRICE CODE H

| PART NO. | H            | T           | F          |
|----------|--------------|-------------|------------|
| 459-900  | .900 (22.9)  | .880 (22.4) | .010 (.25) |
| 459-920  | .920 (23.4)  | .880 (22.4) | .020 (.51) |
| 459-940  | .940 (23.9)  | .880 (22.4) | .030 (.76) |
| 459-960  | .960 (24.4)  | .880 (22.4) | .040 (1.0) |
| 459-980  | .980 (24.9)  | .880 (22.4) | .050 (1.3) |
| 459-1000 | 1.000 (25.4) | .880 (22.4) | .060 (1.5) |
| 459-1020 | 1.020 (25.9) | .880 (22.4) | .070 (1.8) |
| 459-1040 | 1.040 (26.4) | .880 (22.4) | .080 (2.0) |
| 459-1060 | 1.060 (26.9) | .880 (22.4) | .090 (2.3) |
| 459-1080 | 1.080 (27.4) | .880 (22.4) | .100 (2.5) |

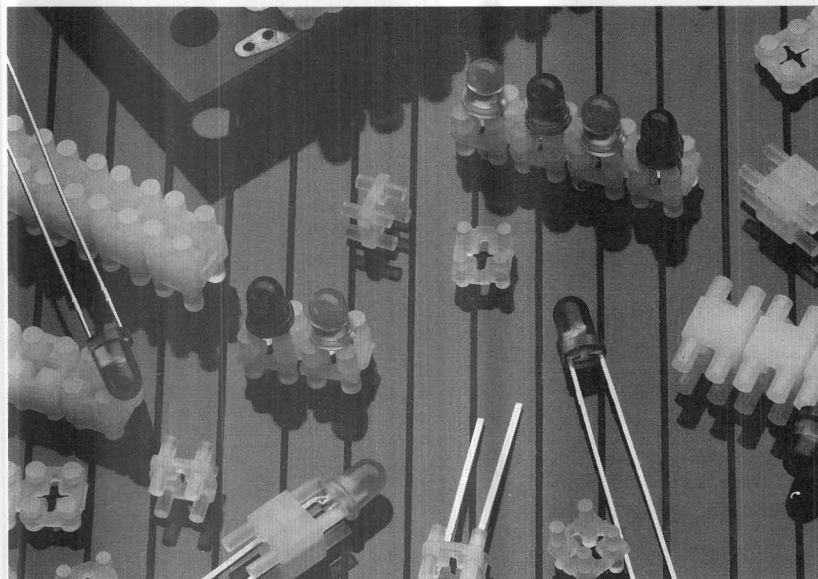
# PERM-O-PAD®

**94V-2**

U.L. RATED MATERIAL

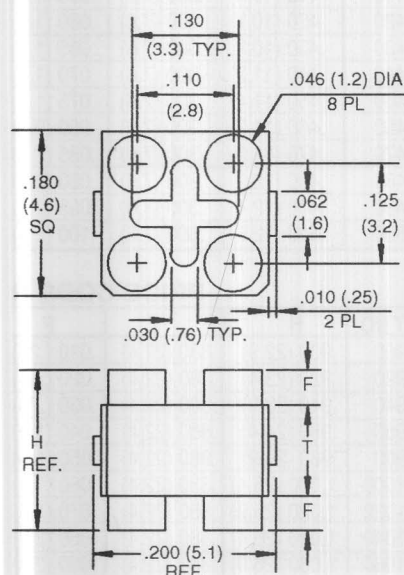
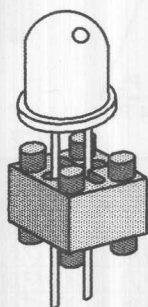
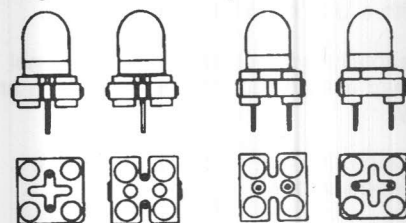
**Bivar**

## T-1 & T-1<sup>3/4</sup> Individual LED Mounts



- 53 different sizes and elevations.
- Vertical mounts assure accurate LED positioning.
- Made from U.L. rated 94V-2 nylon per ASTM D4066 PA111
- Low cost, available from stock.

Perfectly suited for in-line or across alignment of LEDs, these T-1 or T-1<sup>3/4</sup> Individual Mounts provide a simple, yet effective solution to accurate LED installation, while standoffs on both top and bottom allow for board washing and removal of soldering residue. Mounts keep LED leads from being bent or bulb tilted during handling or final assembly.



**INDIVIDUAL (T-1) LED MOUNTS**

### PRICE CODE A

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 460-060  | .060 (1.5) | .040 (1.0) | .010 (.25) |
| 460-070  | .070 (1.8) | .040 (1.0) | .015 (.38) |
| 460-080  | .080 (2.0) | .040 (1.0) | .020 (.51) |
| 460-090  | .090 (2.3) | .040 (1.0) | .025 (.64) |
| 460-100  | .100 (2.5) | .040 (1.0) | .030 (.76) |
| 460-110  | .110 (2.8) | .040 (1.0) | .035 (.89) |
| 460-120  | .120 (3.0) | .040 (1.0) | .040 (1.0) |
| 460-130  | .130 (3.3) | .040 (1.0) | .045 (1.1) |
| 460-140  | .140 (3.6) | .040 (1.0) | .050 (1.3) |
| 460-150  | .150 (3.8) | .040 (1.0) | .055 (1.4) |
| 460-160  | .160 (4.1) | .040 (1.0) | .060 (1.5) |
| 460-170  | .170 (4.3) | .040 (1.0) | .065 (1.7) |
| 460-180  | .180 (4.6) | .040 (1.0) | .070 (1.8) |
| 460-190  | .190 (4.8) | .040 (1.0) | .075 (1.9) |
| 460-200  | .200 (5.1) | .040 (1.0) | .080 (2.0) |
| 460-210  | .210 (5.3) | .040 (1.0) | .085 (2.2) |

### PRICE CODE A

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 465-200  | .200 (5.1) | .150 (3.8) | .025 (.64) |
| 465-210  | .210 (5.3) | .150 (3.8) | .030 (.76) |
| 465-220  | .220 (5.6) | .150 (3.8) | .035 (.89) |
| 465-230  | .230 (5.8) | .150 (3.8) | .040 (1.0) |
| 465-240  | .240 (6.1) | .150 (3.8) | .045 (1.1) |
| 465-250  | .250 (6.4) | .150 (3.8) | .050 (1.3) |
| 465-260  | .260 (6.6) | .150 (3.8) | .055 (1.4) |
| 465-270  | .270 (6.9) | .150 (3.8) | .060 (1.5) |
| 465-280  | .280 (7.1) | .150 (3.8) | .065 (1.7) |
| 465-290  | .290 (7.4) | .150 (3.8) | .070 (1.8) |
| 465-300  | .300 (7.6) | .150 (3.8) | .075 (1.9) |
| 465-310  | .310 (7.9) | .150 (3.8) | .080 (2.0) |
| 465-320  | .320 (8.1) | .150 (3.8) | .085 (2.2) |
| 465-330  | .330 (8.4) | .150 (3.8) | .090 (2.3) |
| 465-340  | .340 (8.6) | .150 (3.8) | .095 (2.4) |
| 465-350  | .350 (8.9) | .150 (3.8) | .100 (2.5) |

### PRICE CODE B

| PART NO. | H           | T          | F          |
|----------|-------------|------------|------------|
| 461-360  | .360 (9.1)  | .340 (8.6) | .010 (.25) |
| 461-380  | .380 (9.7)  | .340 (8.6) | .020 (.51) |
| 461-400  | .400 (10.2) | .340 (8.6) | .030 (.76) |
| 461-420  | .420 (10.7) | .340 (8.6) | .040 (1.0) |
| 461-440  | .440 (11.2) | .340 (8.6) | .050 (1.3) |
| 461-460  | .460 (11.7) | .340 (8.6) | .060 (1.5) |
| 461-480  | .480 (12.2) | .340 (8.6) | .070 (1.8) |
| 461-500  | .500 (12.7) | .340 (8.6) | .080 (2.0) |
| 461-520  | .520 (13.2) | .340 (8.6) | .090 (2.3) |
| 461-540  | .540 (13.7) | .340 (8.6) | .100 (2.5) |

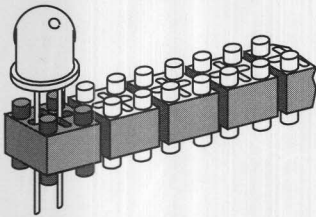
### PRICE CODE F

| PART NO. | H           | T           | F          |
|----------|-------------|-------------|------------|
| 462-560  | .560 (14.2) | .540 (13.7) | .010 (.25) |
| 462-580  | .580 (14.7) | .540 (13.7) | .020 (.51) |
| 462-600  | .600 (15.2) | .540 (13.7) | .030 (.76) |
| 462-620  | .620 (15.7) | .540 (13.7) | .040 (1.0) |
| 462-640  | .640 (16.3) | .540 (13.7) | .050 (1.3) |
| 462-660  | .660 (16.8) | .540 (13.7) | .060 (1.5) |
| 462-680  | .680 (17.3) | .540 (13.7) | .070 (1.8) |
| 462-700  | .700 (17.8) | .540 (13.7) | .080 (2.0) |
| 462-720  | .720 (18.3) | .540 (13.7) | .090 (2.3) |
| 462-730  | .730 (18.5) | .540 (13.7) | .095 (2.4) |
| 462-740  | .740 (18.8) | .540 (13.7) | .100 (2.5) |



## T-1 & T-1¾ Nylon LED Strip Mounts

- 12 (T-1¾) and 15 (T-1) station strip mounts assure even spacing and elevation.
- Provides entire array positioning. May be cut for use from 2 to 15 stations.
- 60 different elevation and spacing sizes.
- Low per-station cost, available from stock.



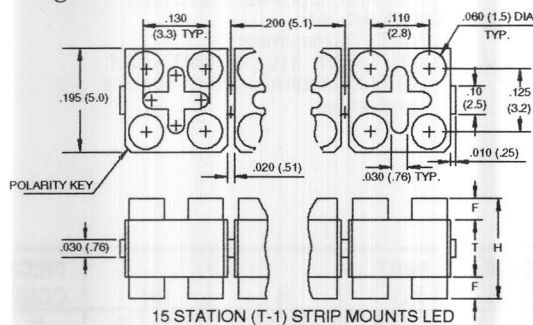
Designed to enable consistent elevation and evenly spaced mounting of LEDs in array-styled applications, an entire selection of T-1¾ and T-1 LED mounts in strip form provides a low-cost, easier assembly solution for the growing use of LEDs.

Molded in one-piece strips of 12 and 15 stations, these "Strip-Mounts" are designed for LED mounting on .200" (T-1) and .250" (T-1¾) spacing. A single strip can be used for an entire array. Or, couplings between individual mounts are easily cut, allowing the user to size arrays from 2 up to 12 or 15 stations. Assured elevation and evenly spaced applications include such areas as fault edges of PCBs or for flush panel displays.

BIVAR Strip-Mounts are available from stock in 2 basic body thicknesses with a total of 30 different elevations in both spacing styles from .060" through .350" in .010" increments and produce optimum, uniform spacing and heights.

Made from U.L. rated 94V-2 NYLON per ASTM D4066 PA 111, these mounts include a polarity indicator for controlled orientation. Standoffs on both sides allow for board washing and removal of assembly/soldering residue. Units are easy to use, economically priced and available from stock.

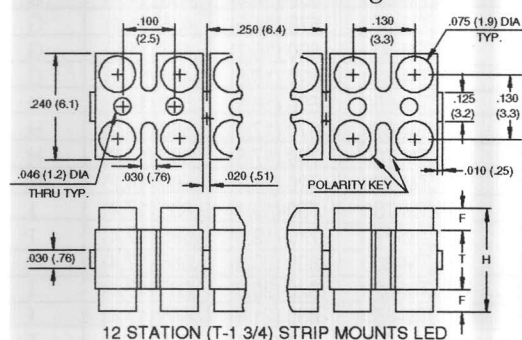
### 15-STATION STRIP-MOUNT PRICE CODE D for Mounting T-1 and flangeless T-1¾ LEDs



| PART NO.  | H          | T          | F          | PART NO.  | H          | T          | F          |
|-----------|------------|------------|------------|-----------|------------|------------|------------|
| T-100-060 | .060 (1.5) | .040 (1.0) | .010 (.25) | T-101-200 | .200 (5.1) | .150 (3.8) | .025 (.64) |
| T-100-070 | .070 (1.8) | .040 (1.0) | .015 (.38) | T-101-210 | .210 (5.3) | .150 (3.8) | .030 (.76) |
| T-100-080 | .080 (2.0) | .040 (1.0) | .020 (.51) | T-101-220 | .220 (5.6) | .150 (3.8) | .035 (.89) |
| T-100-090 | .090 (2.3) | .040 (1.0) | .025 (.64) | T-101-230 | .230 (5.8) | .150 (3.8) | .040 (1.0) |
| T-100-100 | .100 (2.5) | .040 (1.0) | .030 (.76) | T-101-240 | .240 (6.1) | .150 (3.8) | .045 (1.1) |
| T-100-110 | .110 (2.8) | .040 (1.0) | .035 (.89) | T-101-250 | .250 (6.4) | .150 (3.8) | .050 (1.3) |
| T-100-120 | .120 (3.0) | .040 (1.0) | .040 (1.0) | T-101-260 | .260 (6.6) | .150 (3.8) | .055 (1.4) |
| T-100-130 | .130 (3.3) | .040 (1.0) | .045 (1.1) | T-101-270 | .270 (6.9) | .150 (3.8) | .060 (1.5) |
| T-100-140 | .140 (3.6) | .040 (1.0) | .050 (1.3) | T-101-280 | .280 (7.1) | .150 (3.8) | .065 (1.7) |
| T-100-150 | .150 (3.8) | .040 (1.0) | .055 (1.4) | T-101-290 | .290 (7.4) | .150 (3.8) | .070 (1.8) |
| T-100-160 | .160 (4.1) | .040 (1.0) | .060 (1.5) | T-101-300 | .300 (7.6) | .150 (3.8) | .075 (1.9) |
| T-100-170 | .170 (4.3) | .040 (1.0) | .065 (1.7) | T-101-310 | .310 (7.9) | .150 (3.8) | .080 (2.0) |
| T-100-180 | .180 (4.6) | .040 (1.0) | .070 (1.8) | T-101-320 | .320 (8.1) | .150 (3.8) | .085 (2.2) |
| T-100-190 | .190 (4.8) | .040 (1.0) | .075 (1.9) | T-101-330 | .330 (8.4) | .150 (3.8) | .090 (2.3) |
| T-100-200 | .200 (5.1) | .040 (1.0) | .080 (2.0) | T-101-340 | .340 (8.6) | .150 (3.8) | .095 (2.4) |
| T-100-210 | .210 (5.3) | .040 (1.0) | .085 (2.2) | T-101-350 | .350 (8.9) | .150 (3.8) | .100 (2.5) |

NOTE: Length of all parts is 3.0 (76.2) LED spacing is .200 (5.1) (15 station)

### 12-STATION STRIP-MOUNT PRICE CODE D for Mounting T-1¾ LEDs



| PART NO.  | H          | T          | F          | PART NO.  | H          | T          | F          |
|-----------|------------|------------|------------|-----------|------------|------------|------------|
| T-175-060 | .060 (1.5) | .040 (1.0) | .010 (.25) | T-176-200 | .200 (5.1) | .150 (3.8) | .025 (.64) |
| T-175-070 | .070 (1.8) | .040 (1.0) | .015 (.38) | T-176-210 | .210 (5.3) | .150 (3.8) | .030 (.76) |
| T-175-080 | .080 (2.0) | .040 (1.0) | .020 (.51) | T-176-220 | .220 (5.6) | .150 (3.8) | .035 (.89) |
| T-175-090 | .090 (2.3) | .040 (1.0) | .025 (.64) | T-176-230 | .230 (5.8) | .150 (3.8) | .040 (1.0) |
| T-175-100 | .100 (2.5) | .040 (1.0) | .030 (.76) | T-176-240 | .240 (6.1) | .150 (3.8) | .045 (1.1) |
| T-175-110 | .110 (2.8) | .040 (1.0) | .035 (.89) | T-176-250 | .250 (6.4) | .150 (3.8) | .050 (1.3) |
| T-175-120 | .120 (3.0) | .040 (1.0) | .040 (1.0) | T-176-260 | .260 (6.6) | .150 (3.8) | .055 (1.4) |
| T-175-130 | .130 (3.3) | .040 (1.0) | .045 (1.1) | T-176-270 | .270 (6.9) | .150 (3.8) | .060 (1.5) |
| T-175-140 | .140 (3.6) | .040 (1.0) | .050 (1.3) | T-176-280 | .280 (7.1) | .150 (3.8) | .065 (1.7) |
| T-175-150 | .150 (3.8) | .040 (1.0) | .055 (1.4) | T-176-290 | .290 (7.4) | .150 (3.8) | .070 (1.8) |
| T-175-160 | .160 (4.1) | .040 (1.0) | .060 (1.5) | T-176-300 | .300 (7.6) | .150 (3.8) | .075 (1.9) |
| T-175-170 | .170 (4.3) | .040 (1.0) | .065 (1.7) | T-176-310 | .310 (7.9) | .150 (3.8) | .080 (2.0) |
| T-175-180 | .180 (4.6) | .040 (1.0) | .070 (1.8) | T-176-320 | .320 (8.1) | .150 (3.8) | .085 (2.2) |
| T-175-190 | .190 (4.8) | .040 (1.0) | .075 (1.9) | T-176-330 | .330 (8.4) | .150 (3.8) | .090 (2.3) |
| T-175-200 | .200 (5.1) | .040 (1.0) | .080 (2.0) | T-176-340 | .340 (8.6) | .150 (3.8) | .095 (2.4) |
| T-175-210 | .210 (5.3) | .040 (1.0) | .085 (2.2) | T-176-350 | .350 (8.9) | .150 (3.8) | .100 (2.5) |

NOTE: Length of all parts is 3.0 (76.2) LED spacing is .200 (5.1) (15 station)



## PERM-O-PAD<sup>®</sup>

**94V-0**  
U.L. RATED MATERIAL

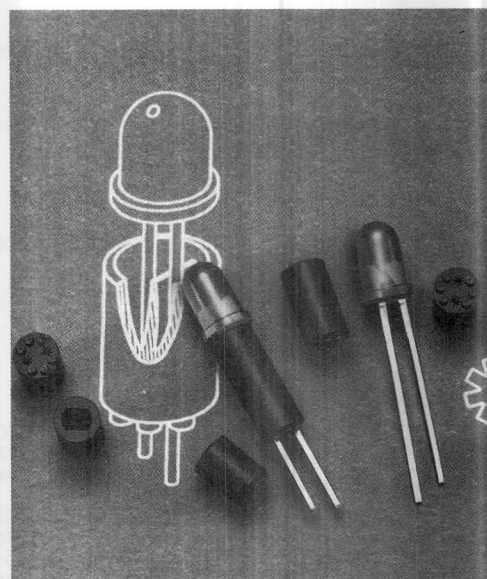
### Molded, Self-Retaining LED Mounts

- One universal style for both T-1 and T-1 3/4 LEDs.
- Internal tapered divider prevents leads from shorting.
- Unique design of lead exit holes allows self-retention and draining of cleaning solvents.
- 54 Standard stock lengths from .120"-.900" (3.1-22.9)
- Molded, rigid design uniformly holds LEDs in truly vertical position.
- High temperature material rated 94V-0 by U.L. suitable for high temperature applications.
- Self-retaining design makes assemblies suitable for automatic insertion.
- Feet on bottoms facilitate cleaning and inspection.
- Available from stock.

Bivar's Molded, Self-Retaining LED Mounts allow easier assembly and handling, while an internal tapered divider protects leads from possible shorting. Rigidly molded, LEDs are held in place uniformly while holding them in a truly vertical position for maximum light intensity of displays where alignment is critical.

Made of high-temperature, black material rated 94V-0 by U.L., pre-assembled LEDs and mounts are suitable for SMT assembly and automatic insertion. A unique lead exit design enables firm retention of LED leads while providing drainage for board washing solvents. To assist cleansing of boards and assure solder filleting and inspection, feet are molded into the base of the LTM Series.

54 standard stock lengths from .120"-.900" (3.1-22.9) are available, while the .195" (5.0) outer diameter of the LTM Series is no larger than industry standard LEDs. All sizes are available for immediate shipment from stock.



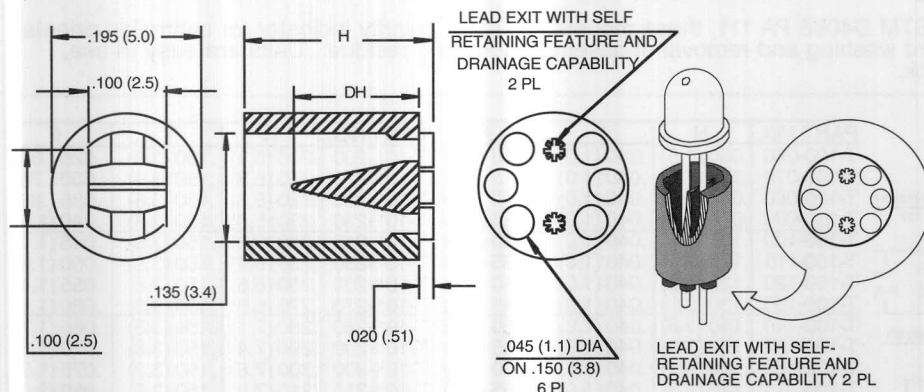
**MATERIAL:** 33% glass reinforced, flame retardant polyphthalamide (PPA) U.L. rated 94V-0.

**COLOR:** Black

**OXYGEN INDEX RATING:** over 28%

**DRAWING TOLERANCES:**

Unless otherwise indicated,  
FRACTIONS:  $\pm 1/64$  (.40)  
DECIMALS: 2 places,  $\pm .010$  (.25)  
ANGULAR:  $\pm 1^\circ$   
DRAFT: 1% maximum  
GATE FLASH: .010 (.25) MAXIMUM:  
.010 (.25) radii allowed on corners and edges.



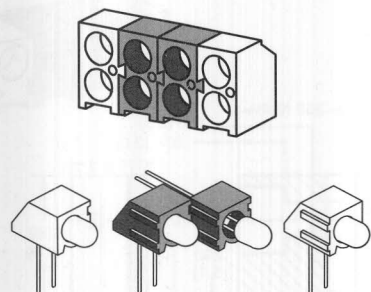
| PART NO. | H          | DH         | PRICE CODE |
|----------|------------|------------|------------|
| LTM-120  | .120 (3.1) | .060 (1.5) | A          |
| LTM-130  | .130 (3.3) | .060 (1.5) | A          |
| LTM-140  | .140 (3.6) | .060 (1.5) | A          |
| LTM-150  | .150 (3.8) | .060 (1.5) | A          |
| LTM-160  | .160 (4.1) | .060 (1.5) | A          |
| LTM-170  | .170 (4.3) | .060 (1.5) | A          |
| LTM-180  | .180 (4.6) | .060 (1.5) | A          |
| LTM-190  | .190 (4.8) | .060 (1.5) | A          |
| LTM-200  | .200 (5.1) | .060 (1.5) | A          |
| LTM-210  | .210 (5.3) | .060 (1.5) | A          |
| LTM-220  | .220 (5.6) | .060 (1.5) | A          |
| LTM-230  | .230 (5.8) | .060 (1.5) | A          |
| LTM-240  | .240 (6.1) | .060 (1.5) | A          |
| LTM-250  | .250 (6.4) | .185 (4.7) | B          |
| LTM-260  | .260 (6.6) | .185 (4.7) | B          |
| LTM-270  | .270 (6.9) | .185 (4.7) | B          |
| LTM-280  | .280 (7.1) | .185 (4.7) | B          |
| LTM-290  | .290 (7.4) | .185 (4.7) | B          |

| PART NO. | H           | DH         | PRICE CODE |
|----------|-------------|------------|------------|
| LTM-300  | .300 (7.6)  | .185 (4.7) | B          |
| LTM-310  | .310 (7.9)  | .185 (4.7) | B          |
| LTM-320  | .320 (8.1)  | .185 (4.7) | B          |
| LTM-330  | .330 (8.4)  | .185 (4.7) | B          |
| LTM-340  | .340 (8.6)  | .185 (4.7) | B          |
| LTM-350  | .350 (8.9)  | .185 (4.7) | B          |
| LTM-360  | .360 (9.1)  | .185 (4.7) | B          |
| LTM-370  | .370 (9.4)  | .185 (4.7) | B          |
| LTM-380  | .380 (9.7)  | .310 (7.9) | F          |
| LTM-390  | .390 (9.9)  | .310 (7.9) | F          |
| LTM-400  | .400 (10.2) | .310 (7.9) | F          |
| LTM-410  | .410 (10.4) | .310 (7.9) | F          |
| LTM-420  | .420 (10.7) | .310 (7.9) | F          |
| LTM-430  | .430 (10.9) | .310 (7.9) | F          |
| LTM-440  | .440 (11.2) | .310 (7.9) | F          |
| LTM-450  | .450 (11.4) | .310 (7.9) | F          |
| LTM-460  | .460 (11.7) | .310 (7.9) | F          |
| LTM-480  | .480 (12.2) | .310 (7.9) | F          |

| PART NO. | H           | DH          | PRICE CODE |
|----------|-------------|-------------|------------|
| LTM-490  | .490 (12.5) | .310 (7.9)  | F          |
| LTM-500  | .500 (12.7) | .435 (11.1) | G          |
| LTM-520  | .520 (13.2) | .435 (11.1) | G          |
| LTM-550  | .550 (14.0) | .435 (11.1) | G          |
| LTM-570  | .570 (14.5) | .435 (11.1) | G          |
| LTM-600  | .600 (15.2) | .435 (11.1) | G          |
| LTM-620  | .620 (15.8) | .435 (11.1) | G          |
| LTM-650  | .650 (16.5) | .560 (14.2) | H          |
| LTM-670  | .670 (17.0) | .560 (14.2) | H          |
| LTM-700  | .700 (17.8) | .560 (14.2) | H          |
| LTM-720  | .720 (18.3) | .560 (14.2) | H          |
| LTM-750  | .750 (19.1) | .685 (17.4) | I          |
| LTM-770  | .770 (19.6) | .685 (17.4) | I          |
| LTM-800  | .800 (20.3) | .685 (17.4) | I          |
| LTM-820  | .820 (20.8) | .685 (17.4) | I          |
| LTM-850  | .850 (21.6) | .685 (17.4) | I          |
| LTM-870  | .870 (22.1) | .685 (17.4) | I          |
| LTM-900  | .900 (22.9) | .685 (17.4) | I          |

# 90° LED HOLDERS

## LED Holders for 90° Display Mounting



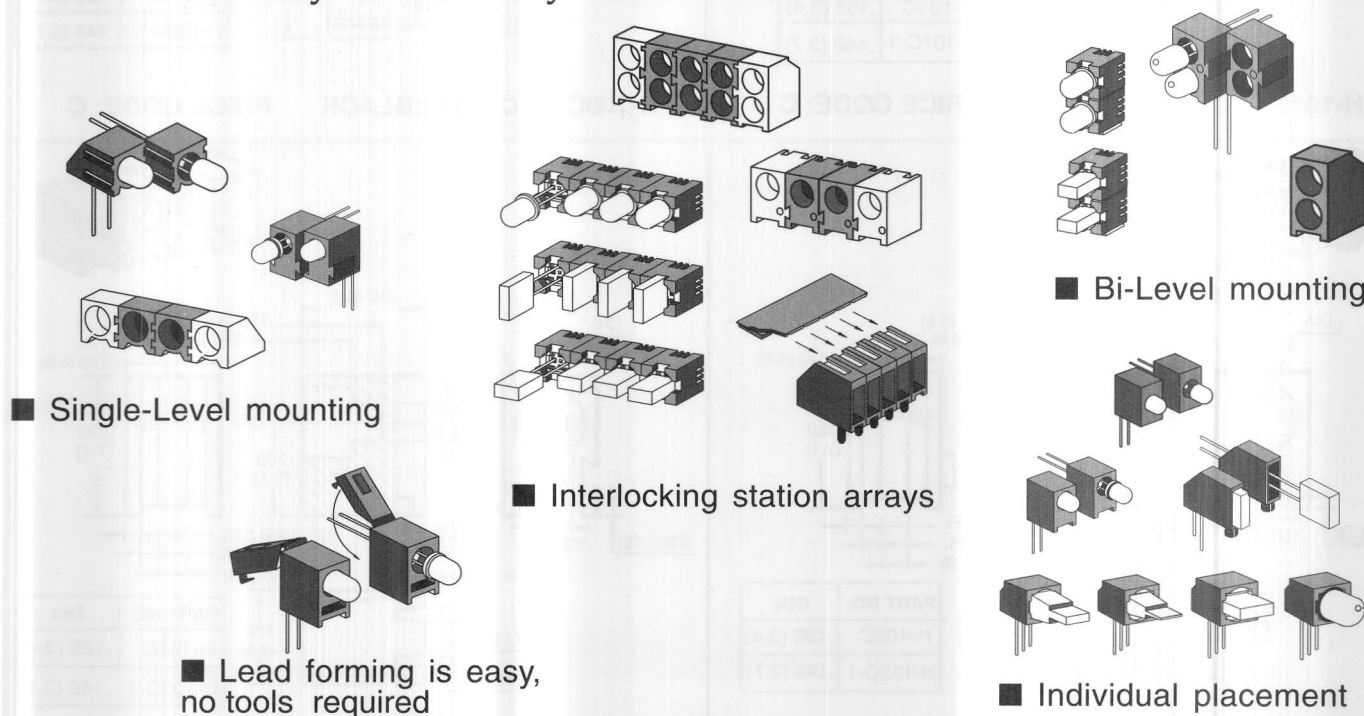
Bivar's 90° LED holders provide an immediate and economic answer to single and bi-level mounting of virtually all LED types. Any intensity or color, or combinations of colors of standard or flangeless LEDs can be easily assembled by hand, with no tooling required.

Choose between individual stations, or interlocking styles which form rigid arrays for accurate LED positioning. Interlocking versions enable an unlimited number of stations to be precisely spaced with elevation consistency for quality LED array displays.

Inventory requirements are substantially reduced since only the most popular standard LED holders and LEDs need to be stocked to immediately satisfy a wide variety of applications.

All of these versatile LED holders are made from 6/6 Nylon per ASTM D-4066 PA111, and all materials are rated either 94V-0 or 94V-2 by U.L.

## 54 Versatile Styles Allow any Combination of LED Colors and Intensities



## Materials & Specifications

**Material:** Nylon, per ASTM D 4066 PA111, U.L. Rated 94V-2 or 94V-0 (See Charts)

**Color:** See charts for **Material** and **Color**

**Oxygen Rating Index:** Over 28%.

**Heat Resistant:** Temperature ratings substantially exceed MIL SPEC requirements. Specific data for particular part numbers are available upon request.

**Individual Part Drawing:** Available upon request.

**94V-0** OR **94V-2**  
U.L. RATED MATERIAL U.L. RATED MATERIAL

### Standard Drawing Tolerances:

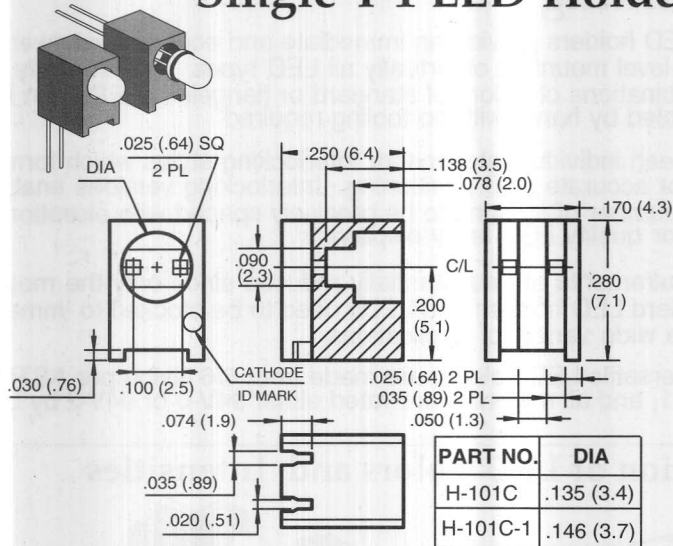
Unless otherwise indicated,  
FRACTIONS:  $\pm 1/64$  (.40)  
DECIMALS: 2 places,  $\pm .010$  (.25)  
DECIMALS: 3 places,  $\pm .005$  (.13)  
ANGULAR:  $\pm 1^\circ$   
DRAFT: 1% maximum  
GATE FLASH: .010 (.25) maximum: .010  
(.25) radii allowed on corners and edges.

# PERM-O-PAD®

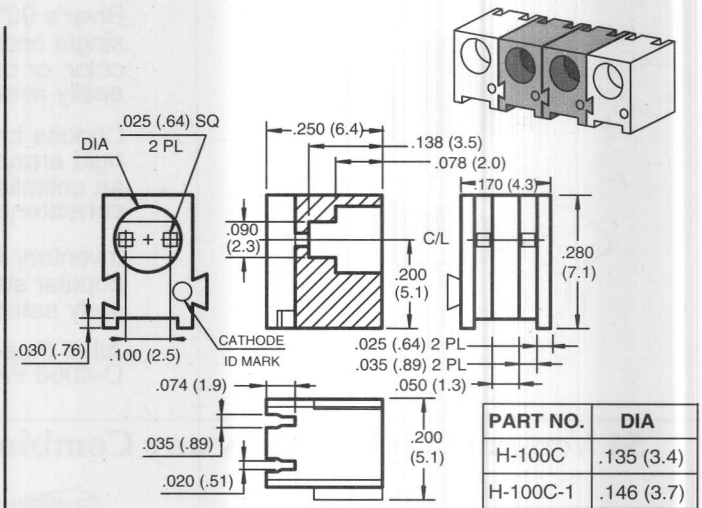
**94V-0**  
U.L. RATED MATERIAL

**Bivar**

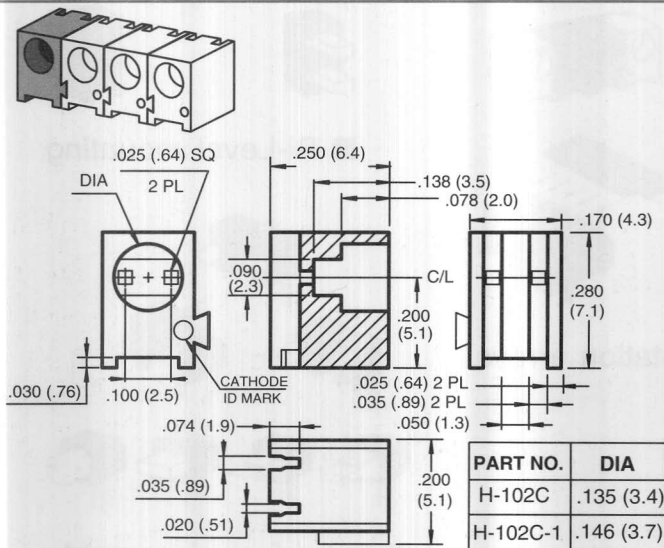
## Single T-1 LED Holders for 90° Display Mounting



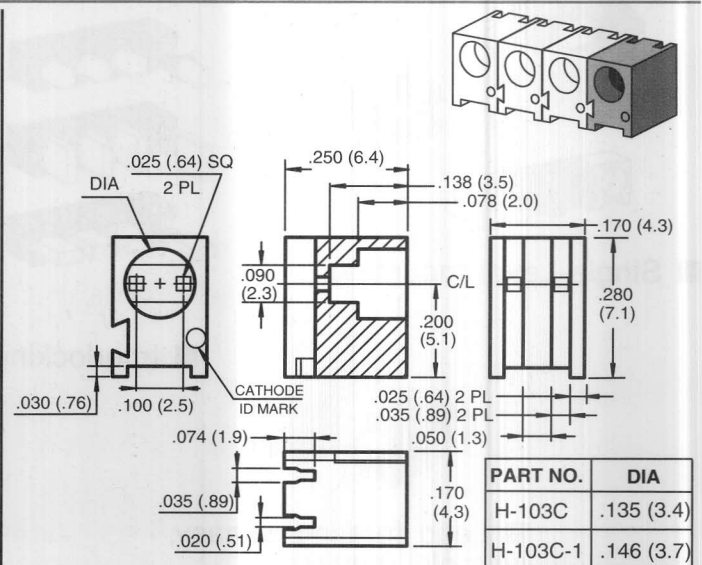
**H-101C COLOR:BLACK PRICE CODE: C**



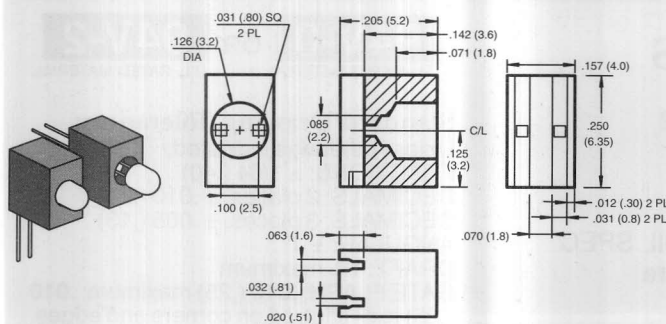
**H-100C COLOR:BLACK PRICE CODE: C**



**H-102C COLOR:BLACK PRICE CODE: C**

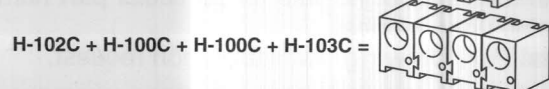
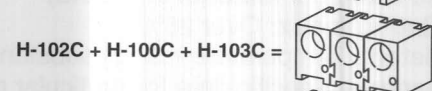
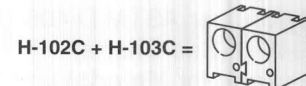
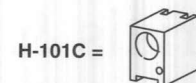


**H-103C COLOR:BLACK PRICE CODE: C**



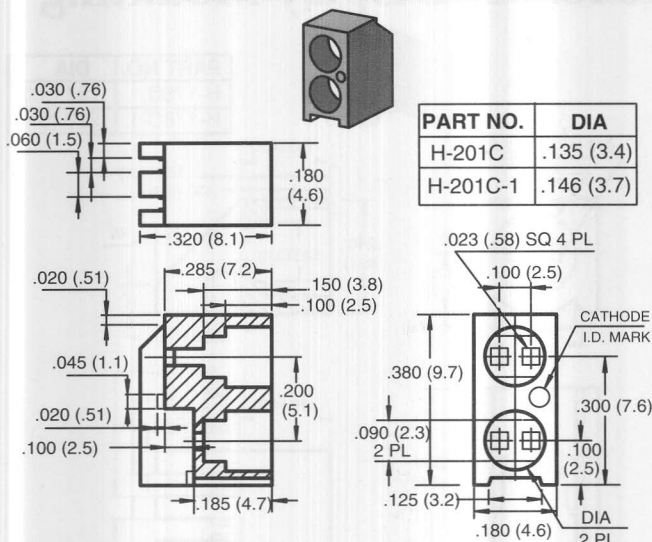
**H-120 COLOR:BLACK PRICE CODE: C**

### EXAMPLES :



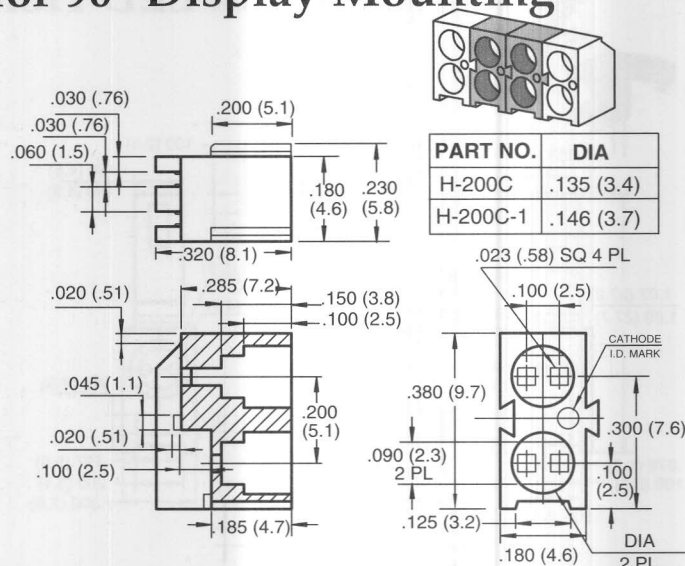


## Double T-1 LED Holders for 90° Display Mounting



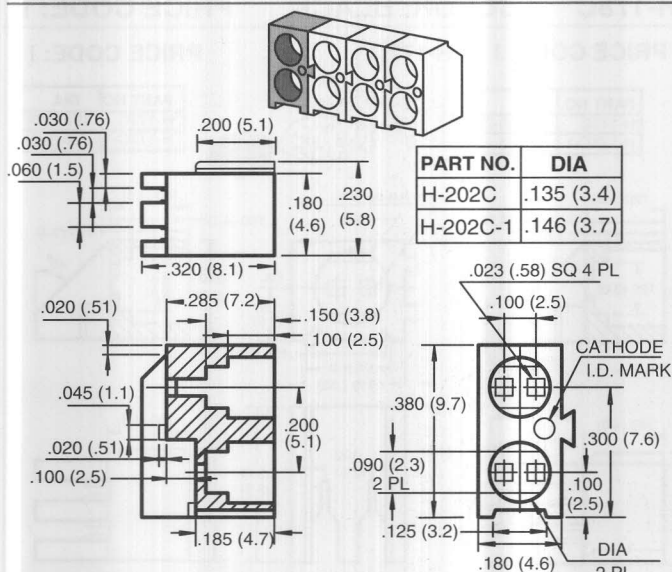
| PART NO. | DIA        |
|----------|------------|
| H-201C   | .135 (3.4) |
| H-201C-1 | .146 (3.7) |

**H-201C COLOR: BLACK PRICE CODE: D**



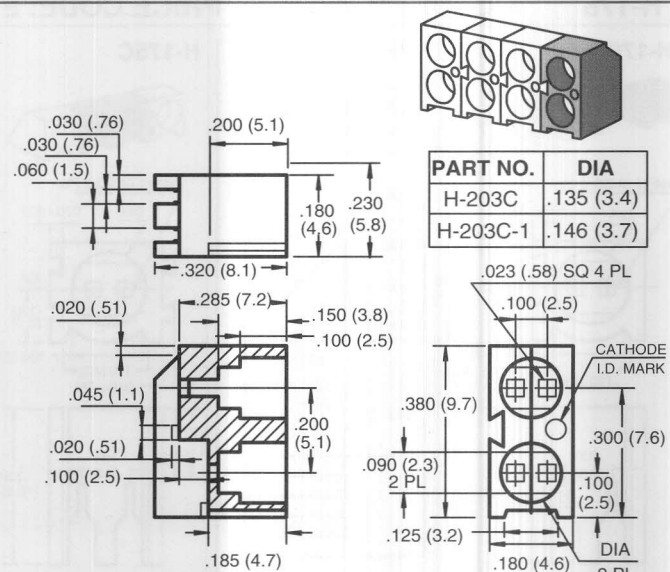
| PART NO. | DIA        |
|----------|------------|
| H-200C   | .135 (3.4) |
| H-200C-1 | .146 (3.7) |

**H-200C COLOR: BLACK PRICE CODE: D**



| PART NO. | DIA        |
|----------|------------|
| H-202C   | .135 (3.4) |
| H-202C-1 | .146 (3.7) |

**H-202C COLOR: BLACK PRICE CODE: D**



| PART NO. | DIA        |
|----------|------------|
| H-203C   | .135 (3.4) |
| H-203C-1 | .146 (3.7) |

**H-203C COLOR: BLACK PRICE CODE: D**

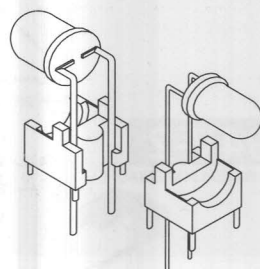
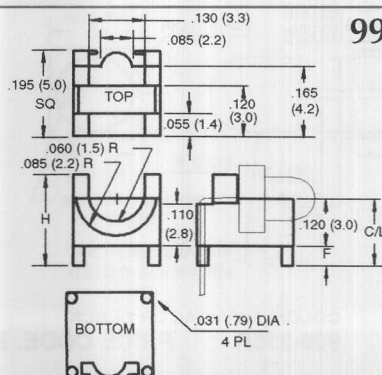
## 999-Series T-1 LED Holder/Spacer for 90° Display Mounting

**94V-2**  
U.L. RATED MATERIAL

COLOR: NATURAL OR BLACK

| PART NO. | C/L        | H          | F          |
|----------|------------|------------|------------|
| 999-125  | .125 (3.2) | .180 (4.6) | .000       |
| 999-150  | .150 (3.8) | .205 (5.2) | .025 (.64) |
| 999-175  | .175 (4.4) | .230 (5.8) | .050 (1.3) |
| 999-200  | .200 (5.1) | .255 (6.5) | .075 (1.9) |

**PRICE CODE: B**

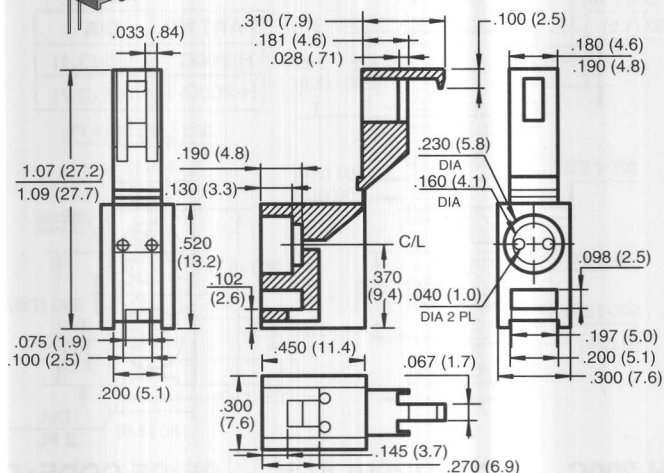
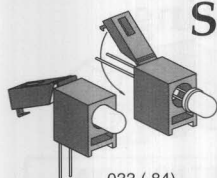


**999-SERIES**

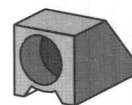
**94V-0**  
U.L. RATED MATERIAL

# Bivar

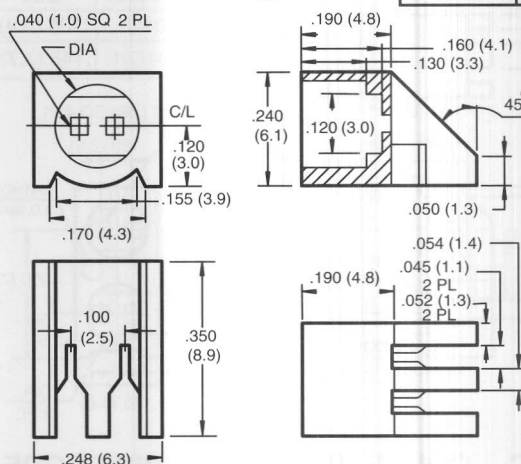
## Single T-1 3/4 LED Holders for 90° Display Mounting



**H-175      COLOR: BLACK      PRICE CODE: E**

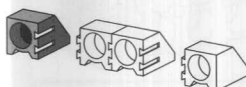


| PART NO. | DIA        |
|----------|------------|
| H-178C   | .197 (5.0) |
| H-178C-1 | .220 (5.6) |

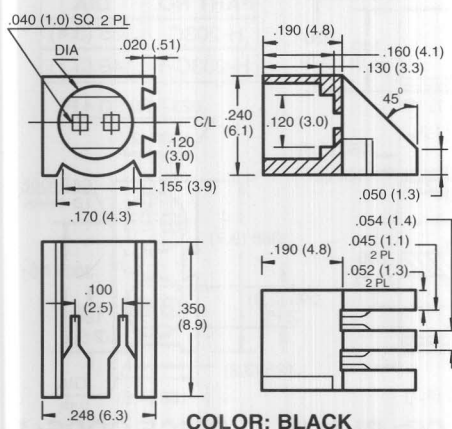


**H-178C      COLOR: BLACK      PRICE CODE: I**

## H-176C

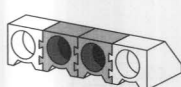
**PRICE CODE: I**

| PART NO. | DIA        |
|----------|------------|
| H-176C   | .197 (5.0) |
| H-176C-1 | .220 (5.6) |

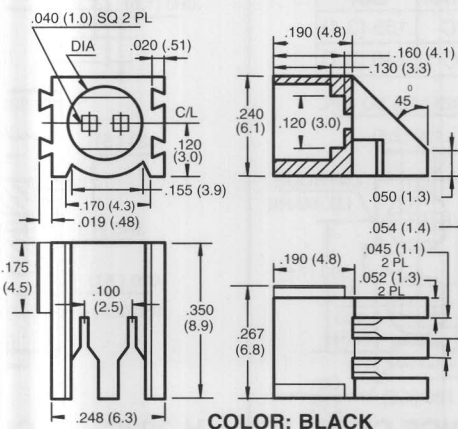


COLOR: BLACK

## H-175C

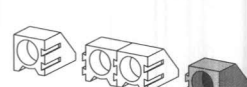
**PRICE CODE: I**

| PART NO. | DIA        |
|----------|------------|
| H-175C   | .197 (5.0) |
| H-175C-1 | .220 (5.6) |

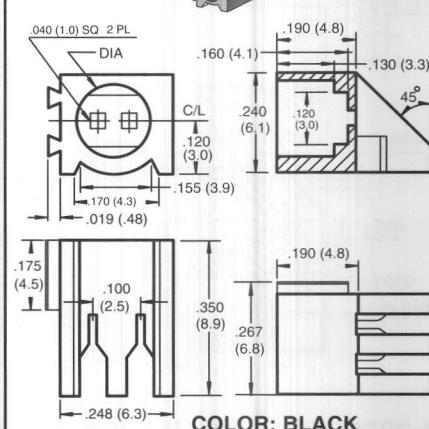


**COLOR: BLACK**

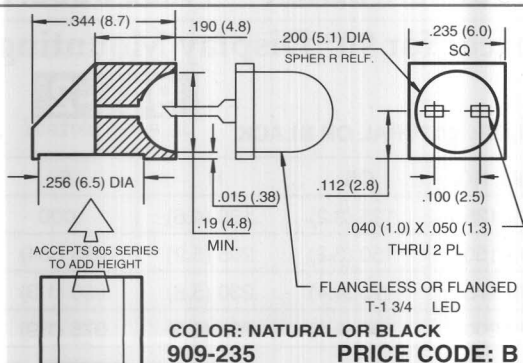
## | H-177C

**PRICE CODE: I**

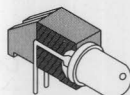
| PART NO  | DIA        |
|----------|------------|
| H-177C   | .197 (5.0) |
| H-177C-1 | .220 (5.6) |



**COLOR: BLACK**

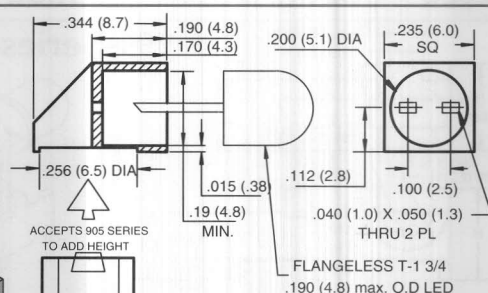
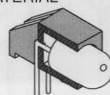


COLOR: NATURAL OR BLACK  
909-235 PRICE CODE: B



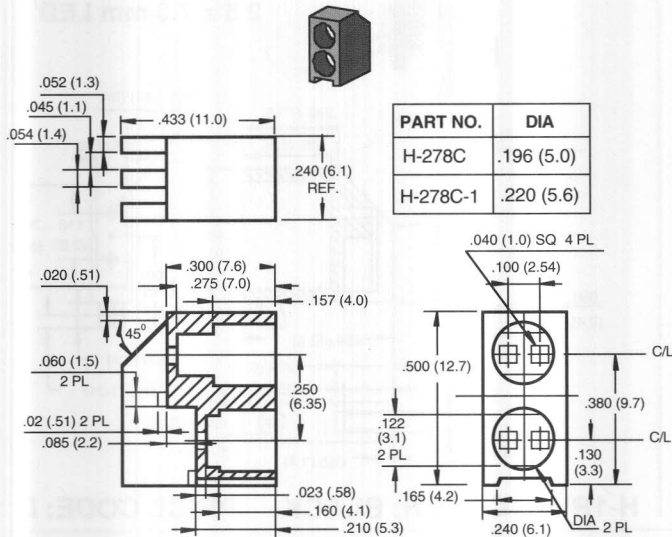
## 94V-2

U.L. RATED MATERIAL



COLOR: NATURAL OR BLACK  
909-235R PRICE CODE: B

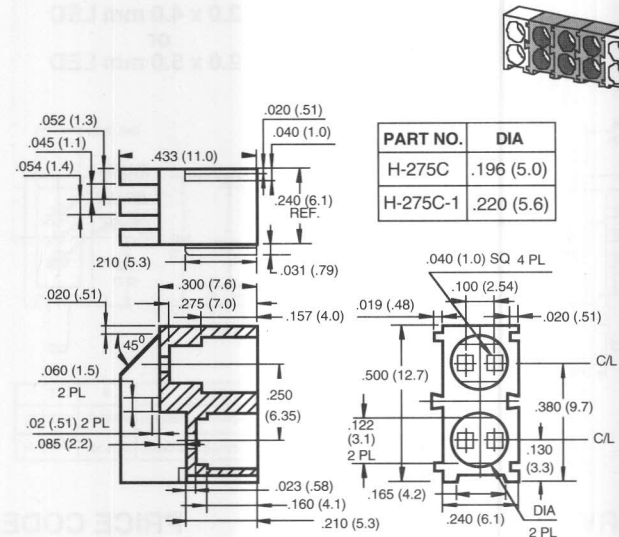
## Double T-1 3/4 LED Holders for 90° Display Mounting



**H-278C**

**COLOR: BLACK**

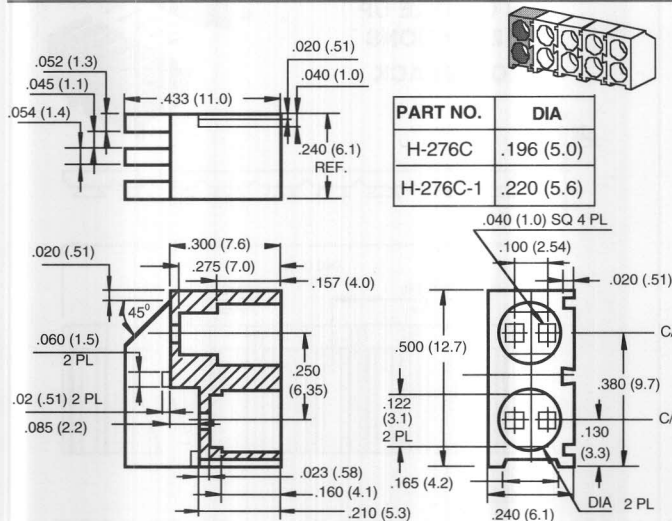
**PRICE CODE: D**



**H-275C**

**COLOR: BLACK**

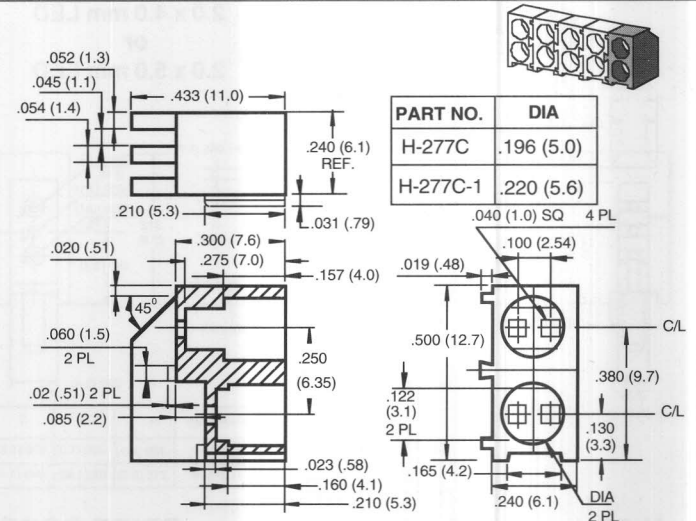
**PRICE CODE: D**



**H-276C**

**COLOR: BLACK**

**PRICE CODE: D**



**H-277C**

**COLOR: BLACK**

**PRICE CODE: D**

### EXAMPLES:

PART HAS TWO DIFFERENT DIAMETERS  
ONE AT .196 (5.0) AND OTHER AT .220 (5.6)

|                            |  |
|----------------------------|--|
| H-278C =                   |  |
| H-276C + H-277C =          |  |
| H-276C + H-275C + H-277C = |  |

### VERSATILITY / Immediate Availability

The use of coupling LED Holders assures accurate, rigid and uniform right angle LED mounting with immediate availability in any color combination, chosen intensities and unlimited array patterns, while reducing stocking requirements and lead times.

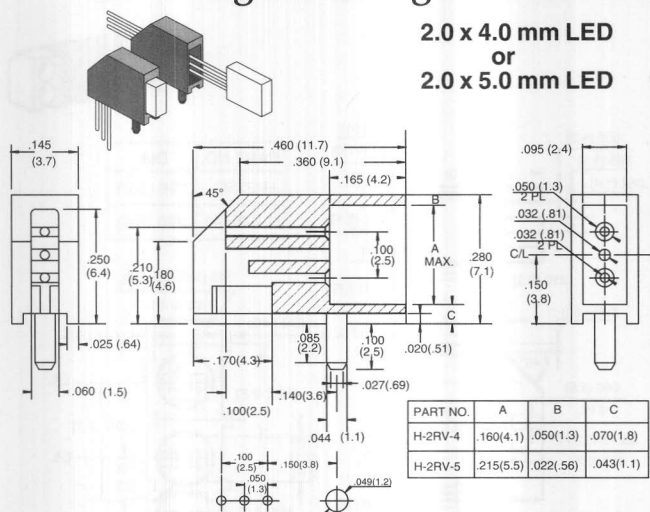


# PERM-O-PAD®

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

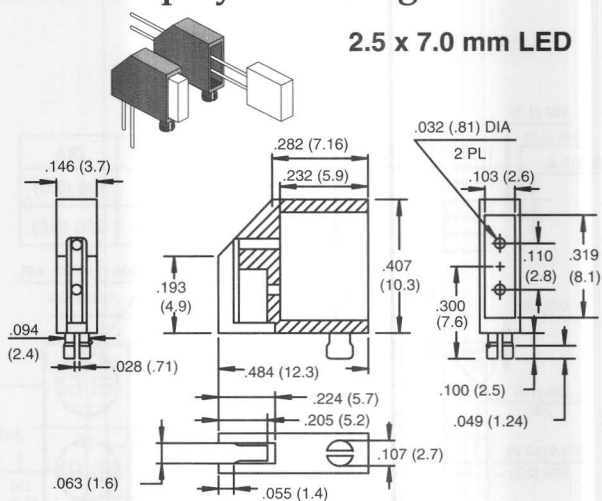
## Single Rectangular LED Holders for 90° Display Mounting



**H-2RV**

**COLOR: BLACK**

**PRICE CODE: D**

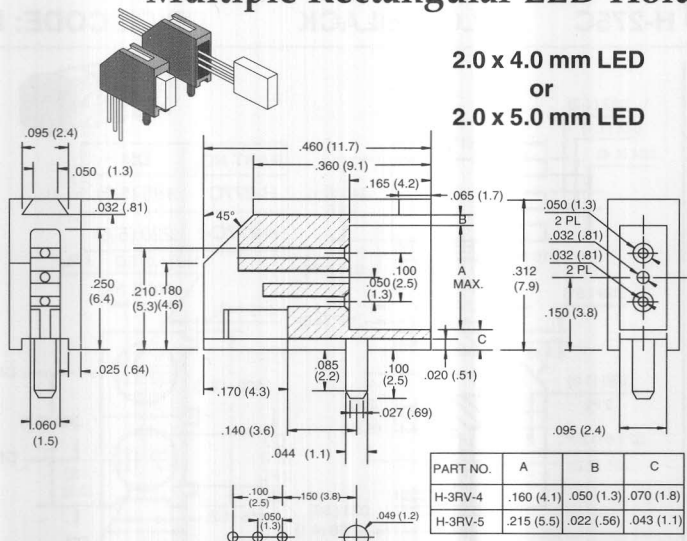


**H-1RV**

**COLOR: BLACK**

**PRICE CODE: D**

## Multiple Rectangular LED Holders for 90° Display Mounting

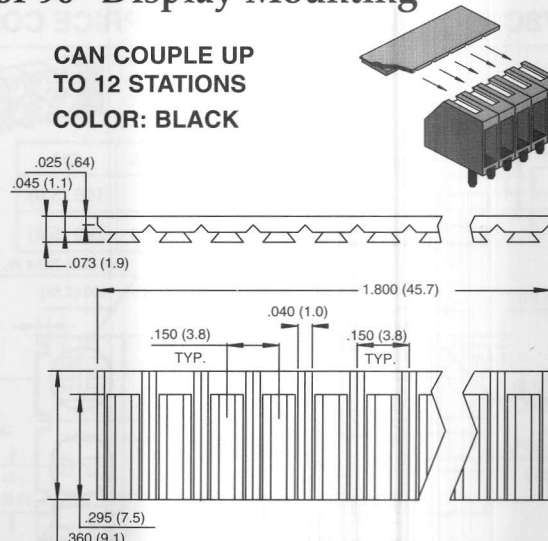


**H-3RV**

**COLOR: BLACK**

**PRICE CODE: D**

**CAN COUPLE UP  
TO 12 STATIONS  
COLOR: BLACK**

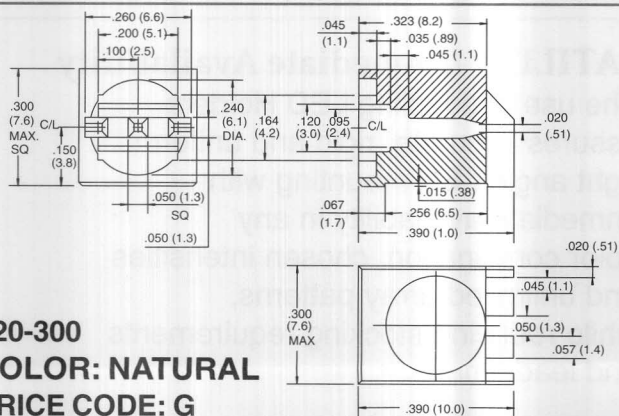


**H-3RV-C**

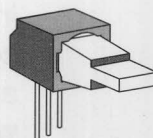
**12 STATION**

**PRICE CODE: E**

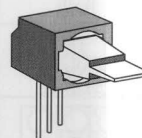
## Multi Functional 3 Ledged LED Holder



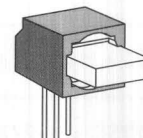
**920-300**  
**COLOR: NATURAL**  
**PRICE CODE: G**



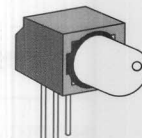
**5.1 X 4.2  
L.E.D**



**5.1 X 3.0  
L.E.D**



**5.1 X 2.4  
L.E.D**



**T 1-3/4  
FLANGED L.E.D**

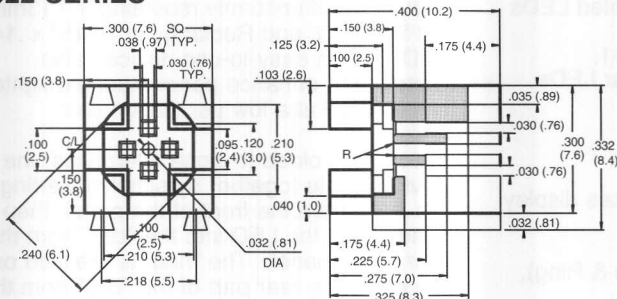
**94V-2**  
U.L. RATED MATERIAL

SEE PAGE 35 FOR COMPLETE MATERIAL  
SPECIFICATIONS AND TOLERANCES

CAGE CODE (FSCM) 32559 © COPYRIGHT 1994, BIVAR, INC.  
BIVAR, INC. • 4 THOMAS • IRVINE, CA 92718-2593

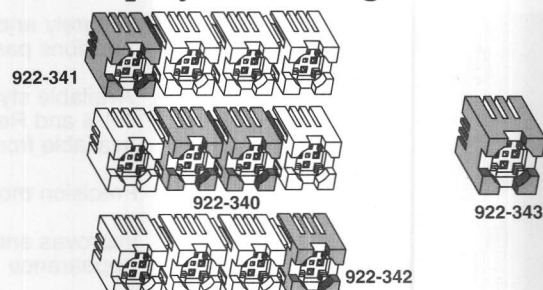
## Multi-Functional LED Holders for 90° Display Mounting

### 922-SERIES



Use for In-Line, Horizontal mounting or as **Base** for **923 Series** in a vertical mode.

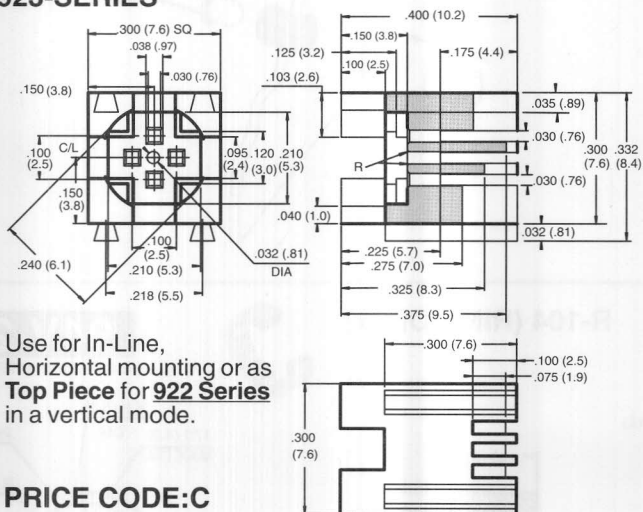
PRICE CODE:C



| PART NO.  | 922-340 | 922-341 | 922-342 | 922-343 |
|---|---------|---------|---------|---------|
| HOLDERS CAN BE COUPLED HORIZONTALLY OR VERTICALLY |         |         |         |         |
| COUPLING SLOT                                     | YES     | N/A     | YES     | N/A     |
| COUPLING FEET                                     | YES     | YES     | N/A     | N/A     |

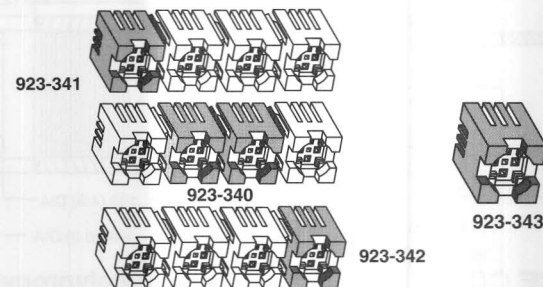
## Multi-Functional LED Holders for 90° Display Mounting

### 923-SERIES



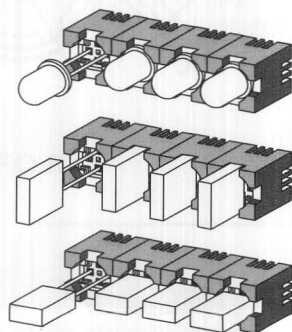
Use for In-Line, Horizontal mounting or as **Top Piece** for **922 Series** in a vertical mode.

PRICE CODE:C



| PART NO.  | 923-340 | 923-341 | 923-342 | 923-343 |
|---|---------|---------|---------|---------|
| HOLDERS CAN BE COUPLED HORIZONTALLY OR VERTICALLY |         |         |         |         |
| COUPLING SLOT                                     | YES     | N/A     | YES     | N/A     |
| COUPLING FEET                                     | YES     | YES     | N/A     | N/A     |

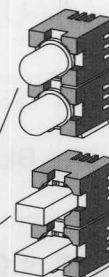
### EXAMPLES:



#### HORIZONTAL MOUNTING

Holders can be Coupled Horizontally or Vertically

#### VERTICAL MOUNTING



923-SERIES

922-SERIES

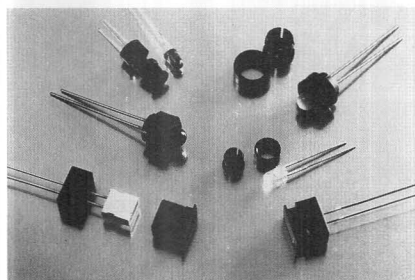
923-SERIES

922-SERIES

For coupling in the Vertical Position, use **922 Series** as base and **923 Series** as Top piece.

## PERM-O-PAD®

### Snap-In Mounting Hardware For Panel Mounted LEDs



**MATERIAL SPECIFICATIONS:**  
Nylon per ASTM D 4066 PA111  
U.L. Rated 94V-2, 94V-0 OR  
Polypropylene as designated  
**COLOR: BLACK**

■ Securely and uniformly positions panel-mounted LEDs

■ Available styles for T-1, T-1½ and Rectangular LEDs available from stock

■ Precision molded

■ Improves and enhances display appearance

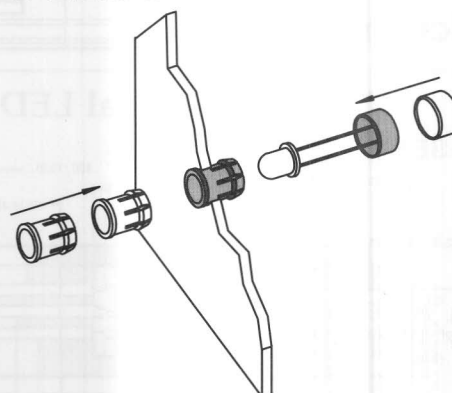
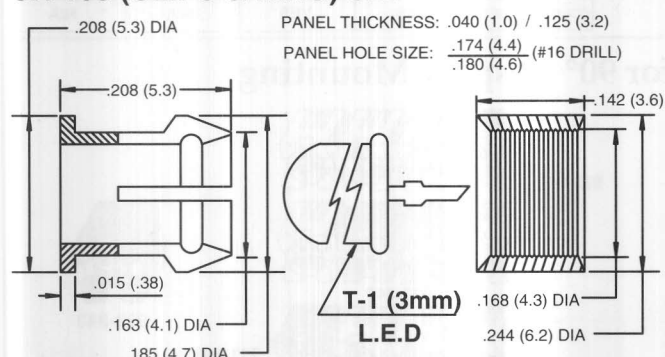
■ Available in sets (Clip & Ring), from stock.

Designed to provide an improved method of securely and uniformly mounting T-1 (3mm), T-1½ (5mm), and Rectangular (.245" x .145") LEDs, these easy-to-use devices also protect and enhance panel mounted lighted displays, all at a low per station cost.

Precision molded to close tolerances, the devices mate together by simply inserting the "clip" from the front of the panel, then assembling the LED into the "clip" from the rear of the panel. The "ring" is pressed onto the engaging rear part of the "clip" from the rear of the panel for firm retention.

### Clips & Rings for T-1 LEDs

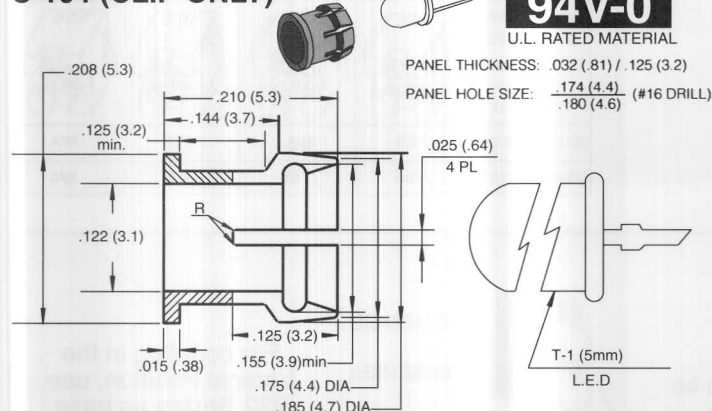
#### CR-100 (CLIPS & RING) SET



**PRICE CODE: G**

**Material: Black Polypropylene**

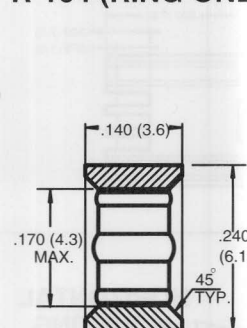
#### C-104 (CLIP ONLY)



**PRICE CODE: B**

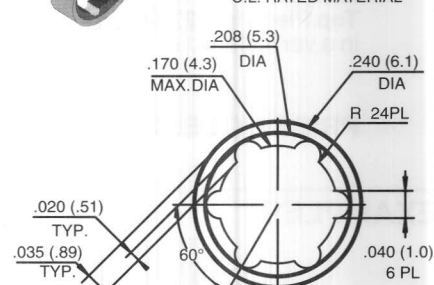
**COLOR: BLACK**

#### R-104 (RING ONLY)



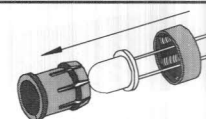
**PRICE CODE: A**

#### 94V-2 U.L. RATED MATERIAL



**COLOR: BLACK**

**\* NOTE :** To order a **SET** of **C-104** (Clip) & **R-104** (Ring) use part number **CR-104** **PRICE CODE: G**

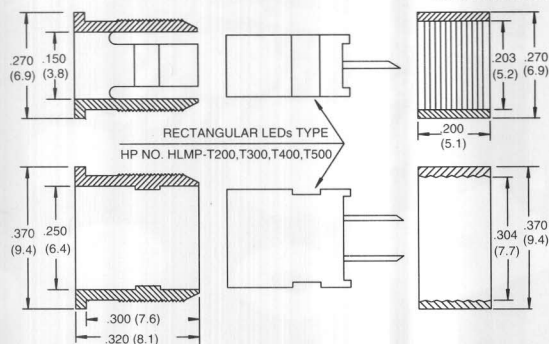




## Clips & Rings For Rectangular LEDs

### CR-300 (CLIP & RING) SET

PANEL THICKNESS: .125 (3.2) / .250 (6.3)  
PANEL HOLE SIZE: .308 (7.8) X .208 (5.3)  
.316 (8.0) X .216 (5.5)

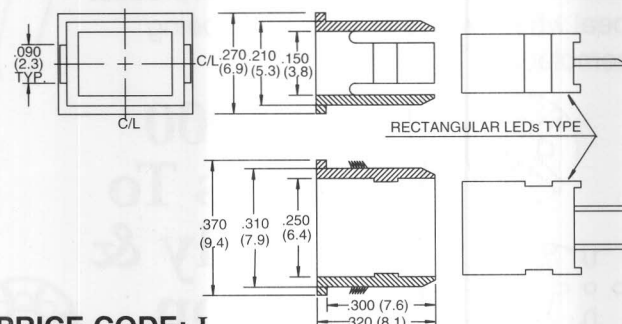


PRICE CODE: C

MATERIAL: POLYPROPYLENE

### C-301-1 (CLIP ONLY) (Self Retaining)

PANEL THICKNESS: .047 (1.2)  
PANEL HOLE SIZE: .330 (8.4) X .218 (5.5)

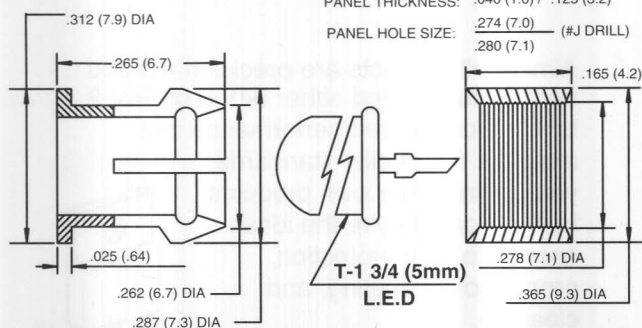


PRICE CODE: I

## Clips & Rings For T-1 3/4 LEDs

### CR-175 (CLIP & RING) SET

PANEL THICKNESS: .040 (1.0) / .125 (3.2)  
PANEL HOLE SIZE: .274 (7.0) (#J DRILL)  
.280 (7.1)



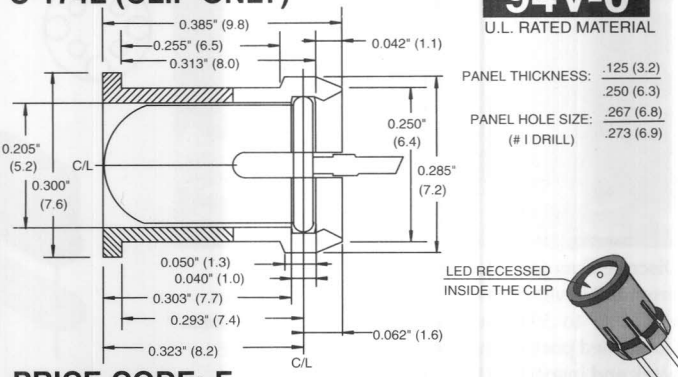
PRICE CODE: G

MATERIAL: POLYPROPYLENE

### C-174L (CLIP ONLY)

**94V-0**  
U.L. RATED MATERIAL

PANEL THICKNESS: .125 (3.2)  
.250 (6.3)  
PANEL HOLE SIZE: .267 (6.8)  
(# I DRILL) .273 (6.9)

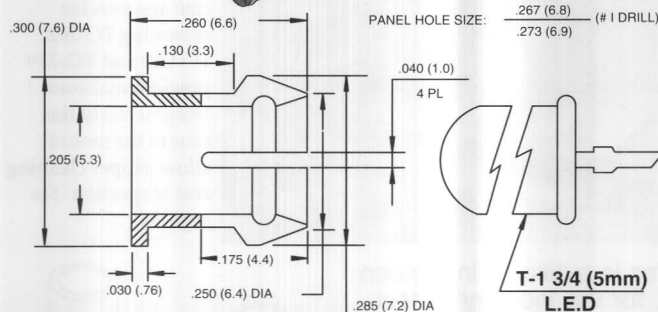


PRICE CODE: F

### C-174 (CLIP ONLY)

**94V-0**  
U.L. RATED MATERIAL

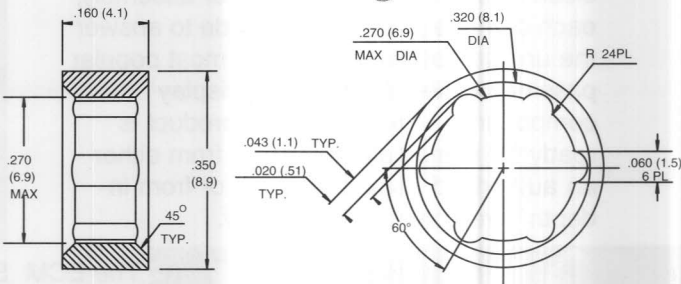
PANEL THICKNESS: .032 (.81) / .125 (3.2)  
PANEL HOLE SIZE: .267 (6.8) (# I DRILL)  
.273 (6.9)



PRICE CODE: B

### R-174 (RING ONLY)

**94V-2**  
U.L. RATED MATERIAL



PRICE CODE: B

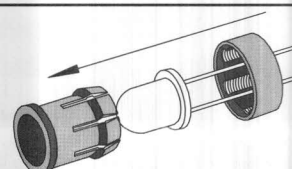
**\* NOTE:** To order **SETS** of :

**C-174 (CLIP) & R-174 (RING), use part number**

**CR-174 PRICE CODE :G**

**C-174L (CLIP) & R-174 (RING), use part number**

**CR-174L PRICE CODE : I**

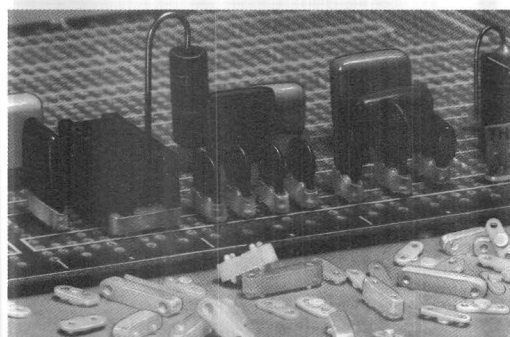


# Permanent Component Mounts & Spacers

Offering over 8,000 low-cost solutions, Bivar's family of PERM-O-PAD® Permanent Mounts and Spacers are an assured way to protect, insulate and improve overall product appeal whenever components are being assembled.

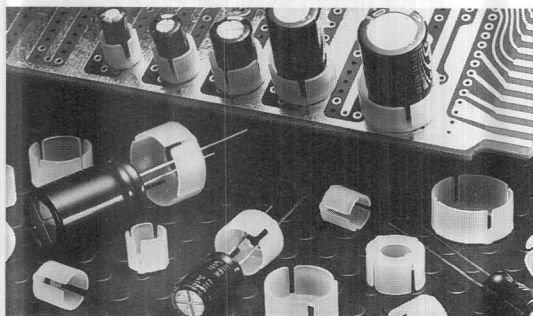


## Over 8,000 Answers To Assembly & Protection.

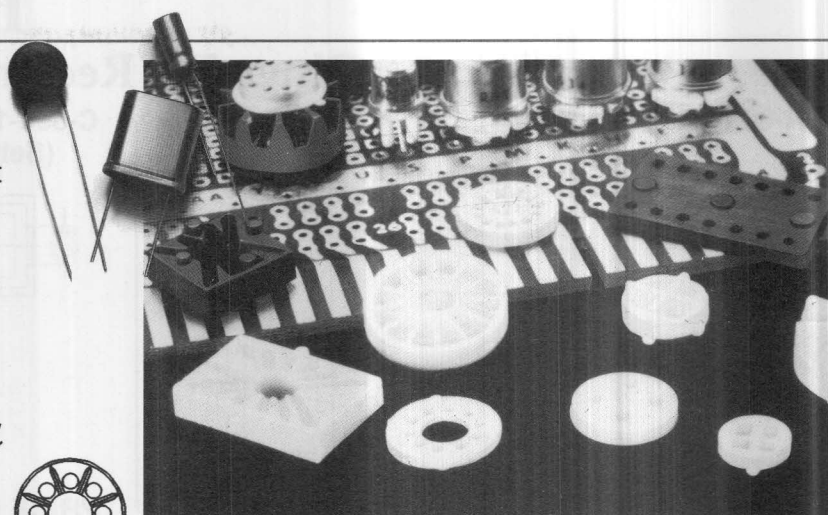


Discrete Component and Capacitor Mounts are provided in versatile styles for mounting discretes with .100" to .500" lead spacing at various elevations. Controlled positioning can improve yield, reduce work and inspection time, and prevent non-conducting solder joints and failures due to lead damage. *See page 47.*

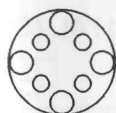
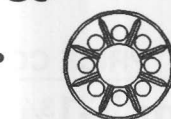
Ideal for protective support, added insulation, shock mounting, heat dissipation, and cleanliness both during and after assembly, each of these products are made to answer the unique needs of industry's most popular passive, active, discrete and display components. Naturally, each product is ready for immediate shipment, from either an authorized Bivar distributor or from in-depth inventories at the factory.



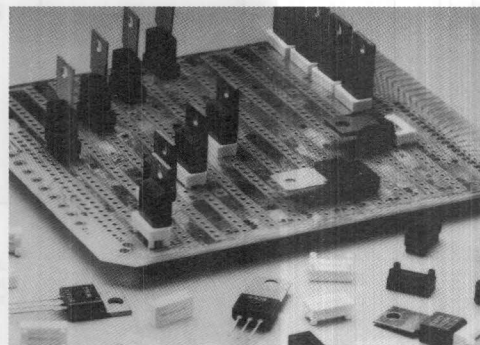
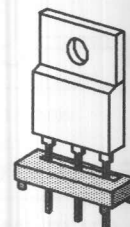
The ECM Series is available in thirteen standard sizes, for the industry's most popular size Electrolytics. Each mount features a slotted cup style, designed to provide supporting side walls that protect the device and insulate the Capacitor from surrounding components and circuitry while allowing venting and proper drainage of fluids or contaminants experienced during board assembly and washing processes. *See page 55.*



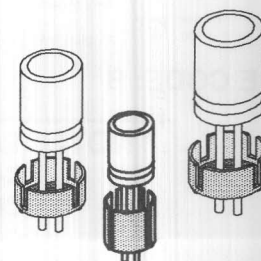
Permanent mounting protect leads and devices during manufacturing and throughout the life of the loaded board, while assuring controlled elevations and alignment. Select from the specific style to meet your applications. *See the following pages through page 58.*



Almost all products are precision molded from material rated either 94V-0 or 94V-2 by U.L. for assured performance that matches the quality standards you put into your own products. Low in cost, they're the ideal answer to lead protection, proper solder filleting, and cleaning.



Power Transistor Mounts provide low-cost answers for mounting TO-202, TO-220 and TO-219 power transistors. Integral feet at the base of the mount allow proper cleaning and inspection. *See page 55.*



## Universal Spacers For Discretes

Available in 4,182 sizes, Bivar's Universal Spacers can be used for mounting discrete devices in almost any lead pattern and elevation. You can choose the most suitable sizes for strength, elevation and ease of assembly, or to facilitate proper filleting and cleaning.

See pages 56 & 57.



## PERM-O-PAD<sup>®</sup>

### The Reasons They Do The Job.

**Protect...** components from shock and vibration with resilient, shock absorbing, vibration-damping mounting, from high temperatures during soldering, by spacing with a heat-buffering fixture and keeping lead origins away from all solder. Protect components seals, by minimizing or eliminating bends, stresses and strains at lead origins, and by increasing lead lengths to reduce heat flow. Most PERM-O-PADS have countersunk holes or slots to minimize lead bending.

**Prevent...** operational overheating by providing adequate air space and lead length for heat dissipation. Prevent short-circuiting, bridging and moisture build-up by elevating and insulating components and by acting as lead-aligning jigs.

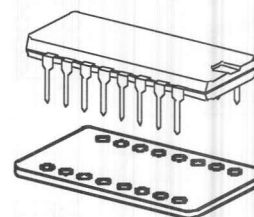
**Improve...** cleanliness. Thorough cleaning beneath and adjacent to components is enhanced by feet or posts on both sides of most pads to give optimum solvent flushing and prevent entrapment of contaminants. Improve solder filleting — ample lead length is provided for maximum, unimpeded capillary action.

**Ensure...** uniform, easily controlled production at economic rates, with simplified assembly, inspection, touch-up and repair work.

**Increase Operational Reliability...** because components are protected mechanically from handling, shock and vibration — and from thermal shock. Proper spacing and lead orientation assures optimum filleting, cleaning and cooling.

**Reduce Scrap, Rejects and Re-work...** because they eliminate uncontrolled hand-forming, crimping, lead nicking and scratching — thus preventing damage to components or circuit board.

**Reduce Labor Costs...** through minimizing assembly and inspection times, and by standardization and work simplification.



## Materials & Specifications

**Material:** Nylon, per ASTM D 4066 PA111, U.L. Rated 94V-2.

Can be dyed for special identification (See "COLOR").

**Color:** White or Natural, unless otherwise indicated. Special colors available upon request.

**Oxygen Rating Index:** Over 28%.

**Heat Resistant:** Temperature ratings substantially exceed MIL SPEC requirements. Specific data for particular PERM-O-PADS are available upon request.

**Individual Part Drawing:** Available upon request.

**94V-2**

U.L. RATED MATERIAL

### Standard Drawing Tolerances:

Unless otherwise indicated,  
FRACTIONS:  $\pm 1/64$  (.40)  
DECIMALS: 2 places,  $\pm .010$  (.25)  
DECIMALS: 3 places,  $\pm .005$  (.13)  
ANGULAR:  $\pm 1^\circ$   
DRAFT: 1% maximum  
GATE FLASH: .010 (.25) maximum: .010  
(.25) radii allowed on corners and edges.



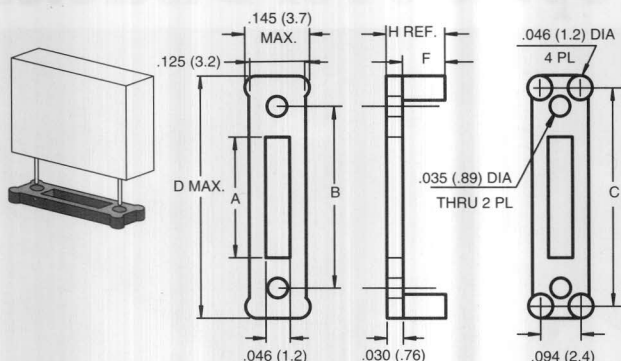
# PERM-O-PAD®

## Single and Dual In-Line Mounts

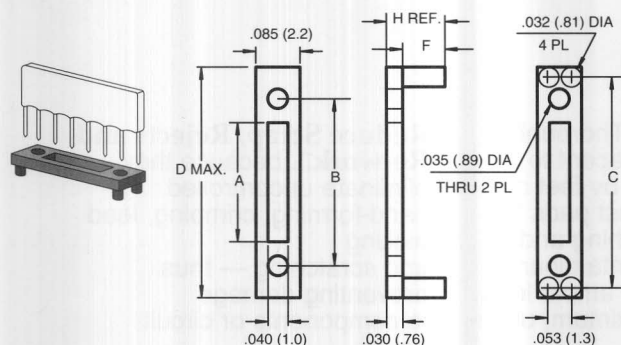
**94V-2**  
U.L. RATED MATERIAL

**Bivar**

### SINGLE IN-LINE MOUNTS

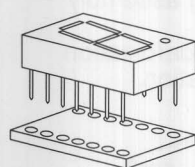


| PART NO. | A           | B           | C           | D           | F          | H          | PRICE CODE |
|----------|-------------|-------------|-------------|-------------|------------|------------|------------|
| 330-200  |             |             |             |             | .000       | .030 (.76) |            |
| 331-200  | .076 (1.9)  | .200 (5.1)  | .235 (6.0)  | .297 (7.5)  | .030 (.76) | .060 (1.5) | A          |
| 332-200  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 335-300  |             |             |             |             | .000       | .030 (.76) |            |
| 336-300  | .176 (4.5)  | .300 (7.6)  | .335 (8.5)  | .397 (10.1) | .030 (.76) | .060 (1.5) | A          |
| 337-300  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 340-400  |             |             |             |             | .000       | .030 (.76) |            |
| 341-400  | .276 (7.0)  | .400 (10.2) | .435 (11.0) | .497 (12.6) | .030 (.76) | .060 (1.5) | B          |
| 342-400  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 345-500  |             |             |             |             | .000       | .030 (.76) |            |
| 346-500  | .376 (9.6)  | .500 (12.7) | .535 (13.6) | .597 (15.2) | .030 (.76) | .060 (1.5) | B          |
| 347-500  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 350-600  |             |             |             |             | .000       | .030 (.76) |            |
| 351-600  | .476 (12.1) | .600 (15.2) | .635 (16.1) | .697 (17.7) | .030 (.76) | .060 (1.5) | G          |
| 352-600  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 355-700  |             |             |             |             | .000       | .030 (.76) |            |
| 356-700  | .576 (14.6) | .700 (17.8) | .735 (18.7) | .797 (20.2) | .030 (.76) | .060 (1.5) | G          |
| 357-700  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |

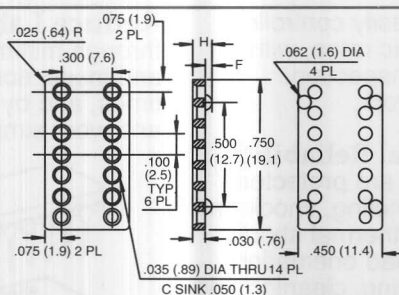


| PART NO. | A           | B           | C           | D           | F          | H          | PRICE CODE |
|----------|-------------|-------------|-------------|-------------|------------|------------|------------|
| 360-200  |             |             |             |             | .000       | .030 (.76) |            |
| 361-200  | .076 (1.9)  | .200 (5.1)  | .265 (6.7)  | .297 (7.5)  | .030 (.76) | .060 (1.5) | A          |
| 362-200  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 365-300  |             |             |             |             | .000       | .030 (.76) |            |
| 366-300  | .176 (4.5)  | .300 (7.6)  | .365 (9.3)  | .397 (10.1) | .030 (.76) | .060 (1.5) | A          |
| 367-300  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 370-400  |             |             |             |             | .000       | .030 (.76) |            |
| 371-400  | .276 (7.0)  | .400 (10.2) | .465 (11.8) | .497 (12.6) | .030 (.76) | .060 (1.5) | B          |
| 372-400  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 375-500  |             |             |             |             | .000       | .030 (.76) |            |
| 376-500  | .376 (9.6)  | .500 (12.7) | .565 (14.4) | .597 (15.2) | .030 (.76) | .060 (1.5) | B          |
| 377-500  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 380-600  |             |             |             |             | .000       | .030 (.76) |            |
| 381-600  | .476 (12.1) | .600 (15.2) | .665 (16.9) | .697 (17.7) | .030 (.76) | .060 (1.5) | G          |
| 382-600  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |
| 385-700  |             |             |             |             | .000       | .030 (.76) |            |
| 386-700  | .576 (14.6) | .700 (17.8) | .765 (19.4) | .797 (20.2) | .030 (.76) | .060 (1.5) | G          |
| 387-700  |             |             |             |             | .060 (1.5) | .090 (2.3) |            |

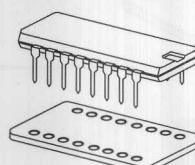
### DUAL-IN-LINE



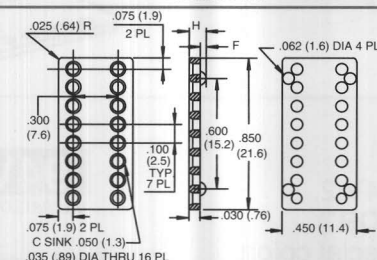
**814 Series**



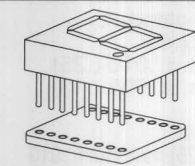
| PART NO. | F          | H          | A55485/06<br>M38527/06 | PRICE CODE | COLOR   |
|----------|------------|------------|------------------------|------------|---------|
| 814-030  | .000       | .030 (.76) | -004N                  | C          | NATURAL |
| 814-045  | .015 (.38) | .045 (1.1) | -                      | C          | BLACK   |
| 814-060  | .030 (.76) | .060 (1.5) | -005N                  | C          | NATURAL |
| 814-080  | .050 (1.3) | .080 (2.0) | -006N                  | C          | NATURAL |
| 814-100  | .070 (1.8) | .100 (2.5) | -                      | C          | BLACK   |



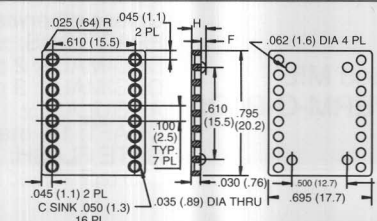
**816 Series**



| PART NO. | F          | H          | A55485/06<br>M38527/06 | PRICE CODE | COLOR   |
|----------|------------|------------|------------------------|------------|---------|
| 816-030  | .000       | .030 (.76) | -                      | C          | BLACK   |
| 816-045  | .015 (.38) | .045 (1.1) | -                      | C          | BLACK   |
| 816-060  | .030 (.76) | .060 (1.5) | -007N                  | C          | NATURAL |
| 816-080  | .050 (1.3) | .080 (2.0) | -                      | C          | BLACK   |
| 816-100  | .070 (1.8) | .100 (2.5) | -                      | C          | BLACK   |



**818 Series**

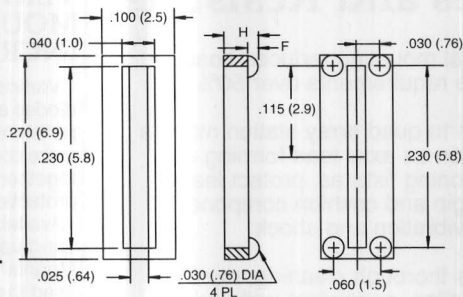
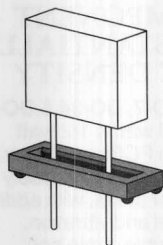


| PART NO. | F          | H          | A55485/06<br>M38527/06 | PRICE CODE | COLOR |
|----------|------------|------------|------------------------|------------|-------|
| 818-030  | .000       | .030 (.76) | -                      | C          | BLACK |
| 818-045  | .015 (.38) | .045 (1.1) | -                      | C          | BLACK |
| 818-060  | .030 (.76) | .060 (1.5) | -                      | C          | BLACK |
| 818-080  | .050 (1.3) | .080 (2.0) | -                      | C          | BLACK |
| 818-100  | .070 (1.8) | .100 (2.5) | -                      | C          | BLACK |

**94V-2**  
U.L. RATED MATERIAL

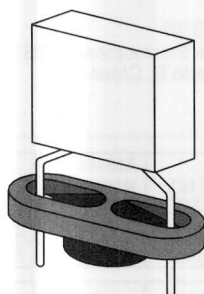
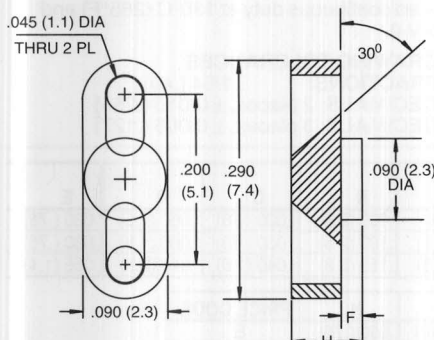
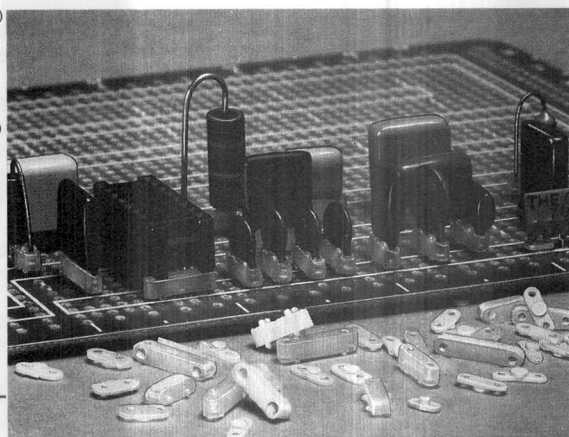
**94V-2**  
U.L. RATED MATERIAL

**PERM-O-PAD®**  
Discrete Component and Capacitor Mounts

**PRICE CODE: A**

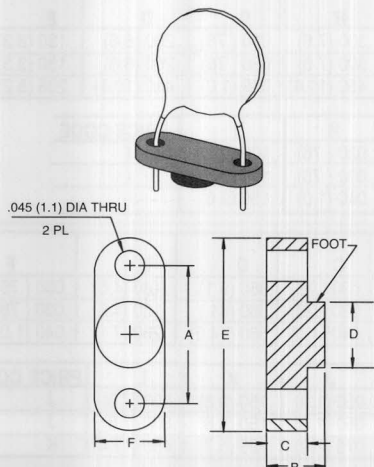
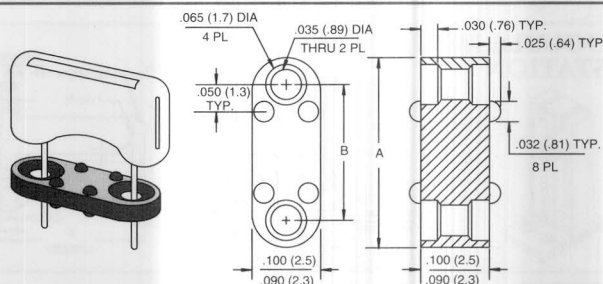
| PART NO. | H          | F          |
|----------|------------|------------|
| 388-025  | .025 (.64) | .000       |
| 388-050  | .050 (1.3) | .025 (.64) |
| 388-075  | .075 (1.9) | .050 (1.3) |

**COLOR: BLACK**



| PART NO. | A55485/06<br>M38527/06 | H          | F          | PRICE CODE |
|----------|------------------------|------------|------------|------------|
| 330-050  | -047N                  | .050 (1.3) | .000       | A          |
| 330-072  | -046N                  | .072 (1.8) | .022 (.56) | A          |
| 330-085  | -048N                  | .085 (2.2) | .035 (.89) | A          |

| PART NO. | A55485/06<br>M38527/06 | DIMENSIONS  |             | PRICE CODE |
|----------|------------------------|-------------|-------------|------------|
|          |                        | A           | B           |            |
| 311-200  | -023N                  | .300 (7.6)  | .200 (5.1)  | A          |
| 312-250  | -024N                  | .350 (8.9)  | .250 (6.4)  | A          |
| 313-300  | -025N                  | .400 (10.2) | .300 (7.6)  | A          |
| 314-350  | -026N                  | .450 (11.4) | .350 (8.9)  | B          |
| 315-400  | -027N                  | .500 (12.7) | .400(10.2)  | B          |
| 316-500  | -028N                  | .600 (15.2) | .500 (12.7) | B          |



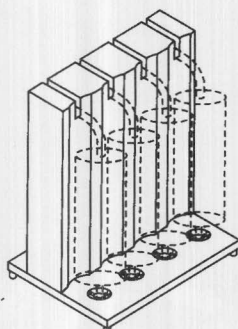
| PART NO.    | A55485/06<br>M38527/06 | A           | B          | C          | D          | E           | F          | PRICE<br>CODE |
|-------------|------------------------|-------------|------------|------------|------------|-------------|------------|---------------|
| 300-100-022 | -                      | .100 (2.5)  | N.A.       | .022 (.55) | N.A.       | .180 (4.6)  | .090 (2.3) | A             |
| 300-100-03  | -                      | .100 (2.5)  | .030 (.76) | .011 (.28) | .050 (1.3) | .180 (4.6)  | .090 (2.3) | A             |
| 300-100     | -008N                  | .100 (2.5)  | .045 (1.1) | .022 (.55) | .050 (1.3) | .180 (4.6)  | .090 (2.3) | A             |
| 300-100-075 | -                      | .100 (2.5)  | .075 (1.9) | .022 (.55) | .055 (1.4) | .180 (4.6)  | .090 (2.3) | A             |
| 301-150 CS  | -                      | .150 (3.8)  | N.A.       | .022 (.55) | N.A.       | .270 (6.9)  | .125 (3.2) | A             |
| 301-150-030 | -                      | .150 (3.8)  | .030 (.76) | .011 (.28) | .090 (2.3) | .270 (6.9)  | .125 (3.2) | A             |
| 301-150-040 | -                      | .150 (3.8)  | .040 (1.0) | .022 (.55) | .090 (2.3) | .270 (6.9)  | .125 (3.2) | A             |
| 301-150     | -009N                  | .150 (3.8)  | .045 (1.1) | .022 (.55) | .090 (2.3) | .270 (6.9)  | .125 (3.2) | A             |
| 301-150 MOD | -                      | .150 (3.8)  | .045 (1.1) | .022 (.55) | .090 (2.3) | .240 (6.1)  | .090 (2.3) | A             |
| 302-200-030 | -                      | .200 (5.1)  | .030 (.76) | .011 (.28) | .090 (2.3) | .290 (7.4)  | .090 (2.3) | A             |
| 302-200-040 | -                      | .200 (5.1)  | .040 (1.0) | .022 (.55) | .090 (2.3) | .290 (7.4)  | .090 (2.3) | A             |
| 302-200     | -010N                  | .200 (5.1)  | .045 (1.1) | .022 (.55) | .090 (2.3) | .290 (7.4)  | .090 (2.3) | A             |
| 303-250     | -017N                  | .250 (6.4)  | .045 (1.1) | .026 (.66) | .090 (2.3) | .340 (8.6)  | .090 (2.3) | A             |
| 304-300     | -018N                  | .300 (7.6)  | .045 (1.1) | .026 (.66) | .140 (3.6) | .390 (9.9)  | .090 (2.3) | B             |
| 305-350     | -019N                  | .350 (8.9)  | .045 (1.1) | .030 (.76) | .140 (3.6) | .440 (11.2) | .090 (2.3) | B             |
| 306-400     | -020N                  | .400 (10.2) | .045 (1.1) | .030 (.76) | .190 (4.8) | .490 (12.4) | .090 (2.3) | B             |
| 307-500     | -021N                  | .500 (12.7) | .045 (1.1) | .030 (.76) | .190 (4.8) | .590 (15.0) | .090 (2.3) | B             |

# VERT-O-MOUNT™

**94V-0**  
U.L. RATED MATERIAL

**Bivar**

## Vertical Mounts for Diodes and Resistors



- Vertical mounting reduces board space requirements over 50%
- Single to quad array station mounts function as axial lead forming and positioning fixtures, protect leads at origin and cushion components from vibration and shock.
- Allows thorough cleaning, rapid inspection, consistent uniformity.
- Meets MIL-M-38527/11 & A-55485/11 requirements.
- 12 sizes and styles available from stock.

| Height    | .312"      | .437"     | .562"     |
|-----------|------------|-----------|-----------|
| Single    | 3121-004   | 4371-005  | 5621-006  |
| Double    | 3122-010   | 4372-011  | 5622-012  |
| Triple    | 3123-016   | 4373-017  | 5623-018  |
| Quad      | 3124-022   | 4374-023  | 5624-024  |
| USE WITH: | DO-34 & 35 | DO-7      | 1/2 Watt  |
|           | Diodes     | Diodes    | Resistors |
|           | 1/8 Watt   | 1/4 Watt  |           |
|           | Resistors  | Resistors |           |

### MATERIAL SPECIFICATIONS

Temperature resistant black thermoplastic (PBT) body per MIL-P-46161, Grade B, Class 30. Material U.L. rated 94V-0.

## VERTICAL COMPONENT MOUNTS SUBSTANTIALLY INCREASE PBC DENSITY

Vertical Mounts for DO-7, DO-34 & DO-35 diodes and 1/8 watt, 1/4 watt & 1/2 watt resistors save space on PCBs and allow many more components to be mounted closely together in much smaller areas, with additional protection against shock and vibration.

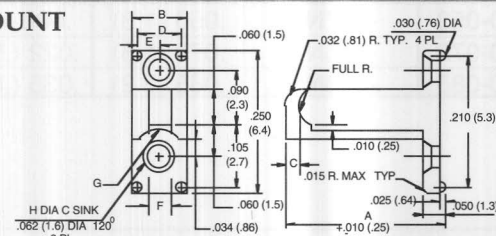
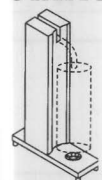
Available in single, double, triple and quadruple stations with standoffs, Vert-O-Mounts™ not only increase density, but can be used to pre-assemble parts in arrays for faster, more economic final assemblies saving time and money.

A total of 12 mounts in heights of .312", .437" & .562" meet the requirements of MIL-M-38527/11 & A-55485/11 and are molded of black thermoplastic polyester (PBT) per MIL-P-46161, Grade B, Class 30. The material is U.L. rated continuous duty at 130°C (265°F) and 94V-0.

### DRAWING TOLERANCES

FRACTIONS: ±1/64 (.40)  
DECIMALS: 2 places, ± 0.010 (.254)  
DECIMALS: 3 places, ± 0.005 (.127)

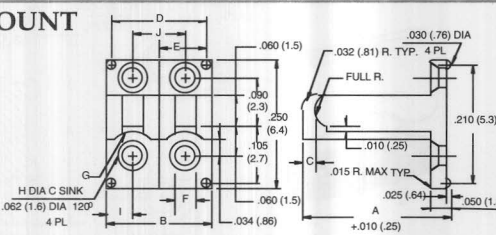
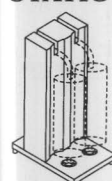
### SINGLE MOUNT STATION



| PART NO. | A55485/11<br>M38527/11- | A           | B          | C          | D          | E          |
|----------|-------------------------|-------------|------------|------------|------------|------------|
| 3121-004 | -004                    | .312 (7.9)  | .100 (2.5) | .030 (.76) | .060 (1.5) | .030 (.76) |
| 4371-005 | -005                    | .437 (11.1) | .100 (2.5) | .030 (.76) | .060 (1.5) | .030 (.76) |
| 5621-006 | -006                    | .562 (14.3) | .150 (3.8) | .040 (1.0) | .110 (2.8) | .055 (1.4) |

| PART NO. | F          | G           | H          | PRICE CODE |
|----------|------------|-------------|------------|------------|
| 3121-004 | .030 (.76) | .055 (1.4)R | .030 (.76) | B          |
| 4371-005 | .030 (.76) | .055 (1.4)R | .030 (.76) | F          |
| 5621-006 | .040 (1.0) | .080 (2.0)R | .040 (1.0) | G          |

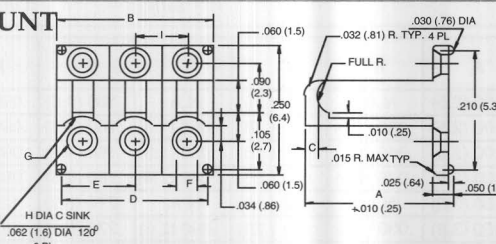
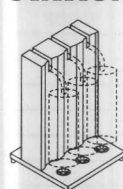
### DOUBLE MOUNT STATION



| PART NO. | A55485/11<br>M38527/11- | A           | B          | C          | D          | E          |
|----------|-------------------------|-------------|------------|------------|------------|------------|
| 3122-001 | -010                    | .312 (7.9)  | .200 (5.1) | .030 (.76) | .160 (4.1) | .080 (2.0) |
| 4372-011 | -011                    | .437 (11.1) | .200 (5.1) | .030 (.76) | .160 (4.1) | .080 (2.0) |
| 5622-012 | -012                    | .562 (14.3) | .300 (7.6) | .040 (1.0) | .260 (6.6) | .085 (3.3) |

| PART NO. | F          | G           | H          | I          | J          | PRICE CODE |
|----------|------------|-------------|------------|------------|------------|------------|
| 3122-010 | .030 (.76) | .055 (1.4)R | .030 (.76) | .050 (1.3) | .100 (2.5) | G          |
| 4372-011 | .030 (.76) | .055 (1.4)R | .030 (.76) | .050 (1.3) | .100 (2.5) | H          |
| 5622-012 | .040 (1.0) | .080 (2.0)R | .040 (1.0) | .075 (1.9) | .150 (3.8) | I          |

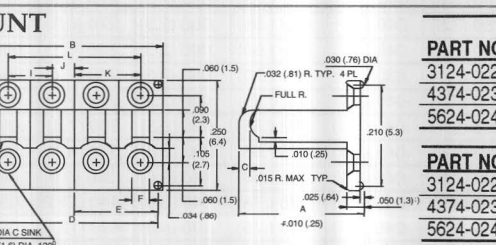
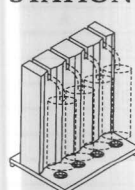
### TRIPLE MOUNT STATION



| PART NO. | A55485/11<br>M38527/11- | A           | B           | C          | D           | E          |
|----------|-------------------------|-------------|-------------|------------|-------------|------------|
| 3123-016 | -016                    | .312 (7.9)  | .300 (7.6)  | .030 (.76) | .260 (6.6)  | .130 (3.3) |
| 4373-017 | -017                    | .437 (11.1) | .300 (7.6)  | .030 (.76) | .260 (6.6)  | .130 (3.3) |
| 5623-018 | -018                    | .562 (14.3) | .450 (11.4) | .040 (1.0) | .410 (10.4) | .205 (5.2) |

| PART NO. | F          | G           | H          | I          | PRICE CODE |
|----------|------------|-------------|------------|------------|------------|
| 3123-016 | .030 (.76) | .055 (1.4)R | .030 (.76) | .100 (2.5) | I          |
| 4373-017 | .030 (.76) | .055 (1.4)R | .030 (.76) | .100 (2.5) | I          |
| 5623-018 | .040 (1.0) | .080 (2.0)R | .040 (1.0) | .150 (3.8) | J          |

### QUAD MOUNT STATION



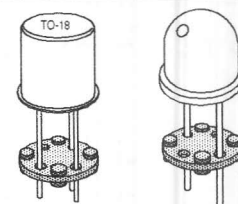
| PART NO. | A55485/11<br>M38527/11- | A           | B           | C          | D           | E          | F          |
|----------|-------------------------|-------------|-------------|------------|-------------|------------|------------|
| 3124-022 | -022                    | .312 (7.9)  | .400 (10.2) | .030 (.76) | .360 (9.1)  | .180 (4.6) | .030 (.76) |
| 4374-023 | -023                    | .437 (11.1) | .400 (10.2) | .030 (.76) | .360 (9.1)  | .180 (4.6) | .030 (.76) |
| 5624-024 | -024                    | .562 (14.3) | .600 (15.2) | .040 (1.0) | .560 (14.2) | .280 (7.1) | .040 (1.0) |

| PART NO. | G           | H          | I          | J          | K          | L           | PRICE CODE |
|----------|-------------|------------|------------|------------|------------|-------------|------------|
| 3124-022 | .055 (1.4)R | .030 (.76) | .100 (2.5) | .050 (1.3) | .150 (3.8) | .300 (7.6)  | J          |
| 4374-023 | .055 (1.4)R | .030 (.76) | .100 (2.5) | .050 (1.3) | .150 (3.8) | .300 (7.6)  | J          |
| 5624-024 | .080 (2.0)R | .040 (1.0) | .150 (3.8) | .075 (1.9) | .225 (5.7) | .450 (11.4) | K          |



## Universal TO-18, T-1<sup>3/4</sup> LED & TO-5 Mounts

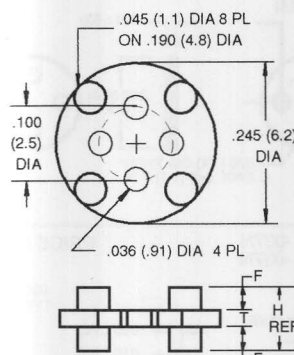
### TO-18 and T-1<sup>3/4</sup> LED Mounts



**PRICE CODE A**

#### 102 SERIES

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 102-050  | .050 (1.3) | .030 (.76) | .010 (.25) |
| 102-060  | .060 (1.5) | .030 (.76) | .015 (.38) |
| 102-070  | .070 (1.8) | .030 (.76) | .020 (.51) |
| 102-080  | .080 (2.0) | .030 (.76) | .025 (.64) |
| 102-090  | .090 (2.3) | .030 (.76) | .030 (.76) |
| 102-100  | .100 (2.5) | .030 (.76) | .035 (.89) |
| 102-110  | .110 (2.8) | .030 (.76) | .040 (1.0) |
| 102-120  | .120 (3.0) | .030 (.76) | .045 (1.1) |

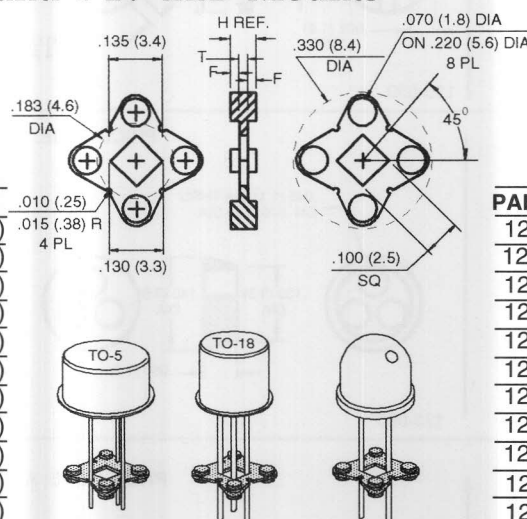


| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 102-130  | .130 (3.3) | .030 (.76) | .050 (1.3) |
| 102-140  | .140 (3.6) | .030 (.76) | .055 (1.4) |
| 102-150  | .150 (3.8) | .030 (.76) | .060 (1.5) |
| 102-160  | .160 (4.1) | .030 (.76) | .065 (1.7) |
| 102-170  | .170 (4.3) | .030 (.76) | .070 (1.8) |
| 102-180  | .180 (4.6) | .030 (.76) | .075 (1.9) |
| 102-190  | .190 (4.8) | .030 (.76) | .080 (2.0) |
| 102-200  | .200 (5.1) | .030 (.76) | .085 (2.2) |

### Universal TO-5, to TO-18 and T-1<sup>3/4</sup> LED Mounts

#### 126 SERIES

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 126-140  | .140 (3.5) | .030 (.76) | .055 (1.4) |
| 126-150  | .150 (3.8) | .030 (.76) | .060 (1.5) |
| 126-160  | .160 (4.1) | .030 (.76) | .065 (1.7) |
| 126-170  | .170 (4.3) | .030 (.76) | .070 (1.8) |
| 126-180  | .180 (4.6) | .030 (.76) | .075 (1.9) |
| 126-190  | .190 (4.8) | .030 (.76) | .080 (2.0) |
| 126-200  | .200 (5.1) | .030 (.76) | .085 (2.2) |
| 126-210  | .210 (5.3) | .030 (.76) | .090 (2.3) |
| 126-220  | .220 (5.6) | .030 (.76) | .095 (2.4) |
| 126-230  | .230 (5.8) | .030 (.76) | .100 (2.5) |
| 126-240  | .240 (6.1) | .030 (.76) | .105 (2.7) |



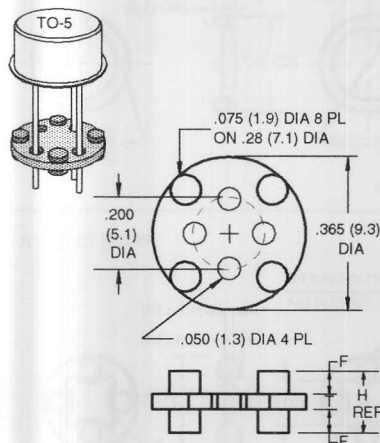
**PRICE CODE A**

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 126-030  | .030 (.76) | .030 (.76) | .000       |
| 126-040  | .040 (1.0) | .030 (.76) | .005 (.13) |
| 126-050  | .050 (1.3) | .030 (.76) | .010 (.25) |
| 126-060  | .060 (1.5) | .030 (.76) | .015 (.38) |
| 126-070  | .070 (1.8) | .030 (.76) | .020 (.51) |
| 126-080  | .080 (2.0) | .030 (.76) | .025 (.64) |
| 126-090  | .090 (2.3) | .030 (.76) | .030 (.76) |
| 126-100  | .100 (2.5) | .030 (.76) | .035 (.89) |
| 126-110  | .110 (2.8) | .030 (.76) | .040 (1.0) |
| 126-120  | .120 (3.0) | .030 (.76) | .045 (1.1) |
| 126-130  | .130 (3.3) | .030 (.76) | .050 (1.3) |

### TO-5 Mounts

#### 514 SERIES

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 514-050  | .050 (1.3) | .030 (.76) | .010 (.25) |
| 514-060  | .060 (1.5) | .030 (.76) | .015 (.38) |
| 514-070  | .070 (1.8) | .030 (.76) | .020 (.51) |
| 514-080  | .080 (2.0) | .030 (.76) | .025 (.64) |
| 514-090  | .090 (2.3) | .030 (.76) | .030 (.76) |
| 514-100  | .100 (2.5) | .030 (.76) | .035 (.89) |
| 514-110  | .110 (2.8) | .030 (.76) | .040 (1.0) |
| 514-120  | .120 (3.0) | .030 (.76) | .045 (1.1) |
| 514-130  | .130 (3.3) | .030 (.76) | .050 (1.3) |
| 514-140  | .140 (3.6) | .030 (.76) | .055 (1.4) |



**PRICE CODE A**

| PART NO. | H          | T          | F          |
|----------|------------|------------|------------|
| 514-150  | .150 (3.8) | .030 (.76) | .060 (1.5) |
| 514-160  | .160 (4.1) | .030 (.76) | .065 (1.7) |
| 514-170  | .170 (4.3) | .030 (.76) | .070 (1.8) |
| 514-180  | .180 (4.6) | .030 (.76) | .075 (1.9) |
| 514-190  | .190 (4.8) | .030 (.76) | .080 (2.0) |
| 514-200  | .200 (5.1) | .030 (.76) | .085 (2.2) |
| 514-210  | .210 (5.3) | .030 (.76) | .090 (2.3) |
| 514-220  | .220 (5.6) | .030 (.76) | .095 (2.4) |
| 514-230  | .230 (5.8) | .030 (.76) | .100 (2.5) |
| 514-240  | .240 (6.1) | .030 (.76) | .105 (2.7) |

# PERM-O-PAD®

**94V-2**  
U.L. RATED MATERIAL

**Bivar**

## TO-18 & T-1¾ LED Mounts

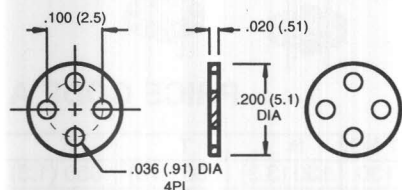
A55485/01-040N  
M38527/01-040N

PRICE CODE: A

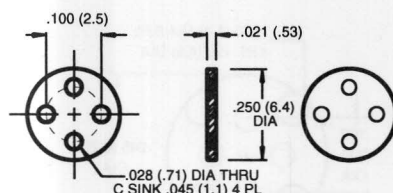
PRICE CODE: A

A55485/01-039N  
M38527/01-039N

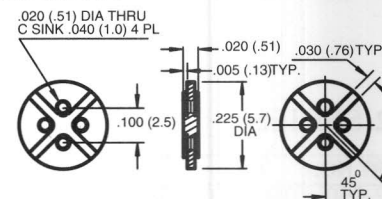
PRICE CODE: A



104-020



105-021



108-021

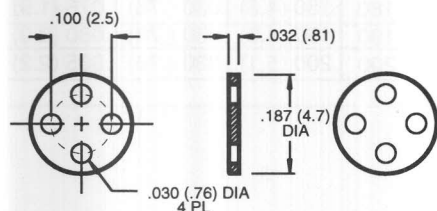
PRICE CODE: A

A55485/01-037N  
M38527/01-037N

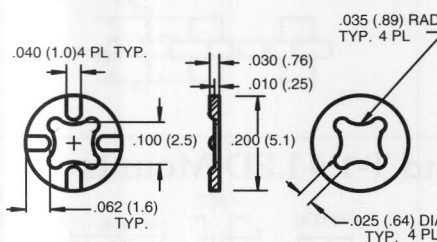
PRICE CODE: A

A55485/07-002N  
M38527/07-002N

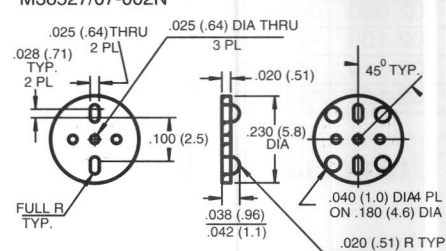
PRICE CODE: A



121-032



110-030



112-040

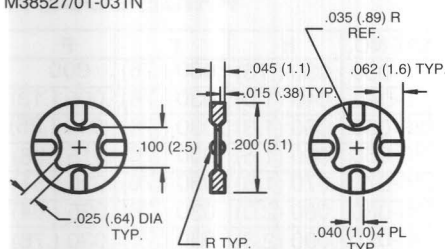
A55485/01-031N  
M38527/01-031N

PRICE CODE: A

PRICE CODE: A

A55485/01-036N  
M38527/01-036N

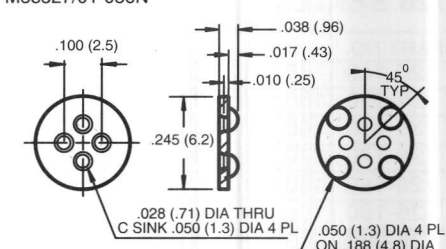
PRICE CODE: A



109-045



123-050



118-055

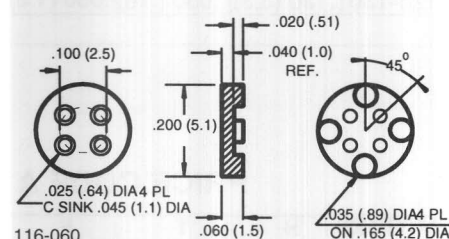
A55485/01-035N  
M38527/01-035N

PRICE CODE: A

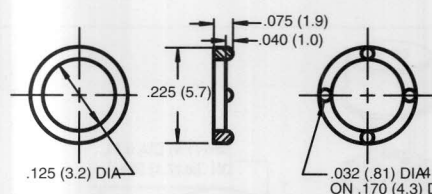
PRICE CODE: A

A55485/01-034N  
M38527/01-034N

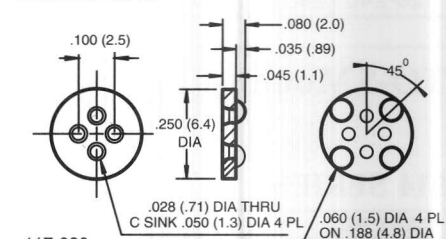
PRICE CODE: A



116-060



103-080

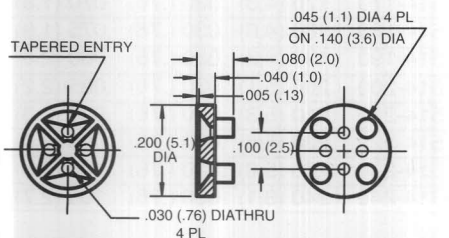


117-080

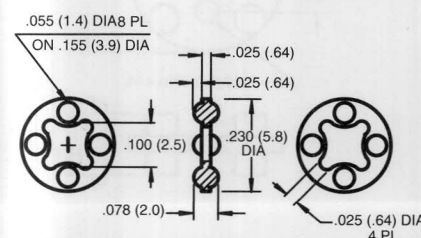
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PRICE CODE: A

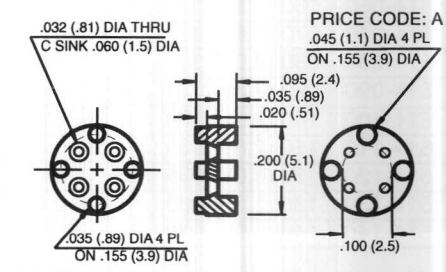
PRICE CODE: A



111-080



125-080

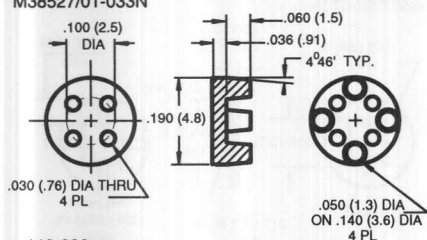


100-095

## TO-18 & T-1 3/4 LED Mounts and TO-18 Spreaders

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M38527/01-033N

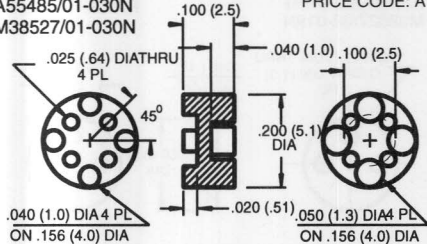
PRICE CODE: A



119-096

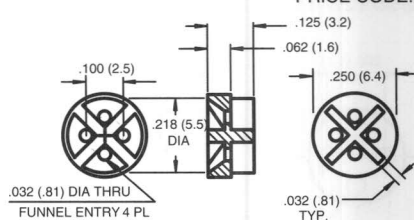
A55485/01-030N  
M38527/01-030N

PRICE CODE: A

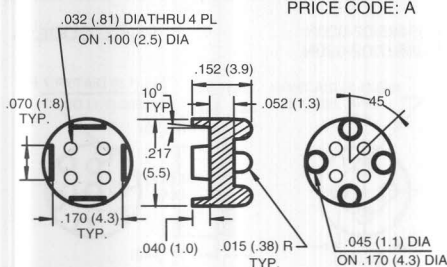


115-100

PRICE CODE: A



113-125

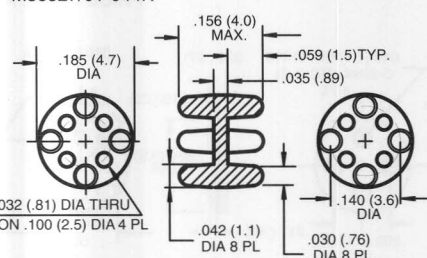


122-152

PRICE CODE: A

A55485/01-044N  
M38527/01-044N

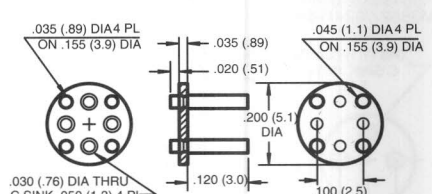
PRICE CODE: A



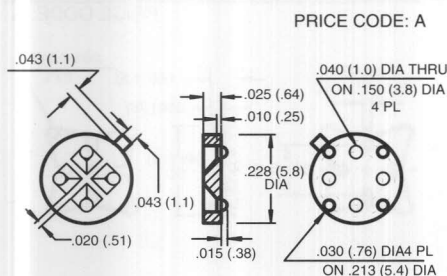
120-156

A55485/01-043N  
M38527/01-043N

PRICE CODE: A



107-180

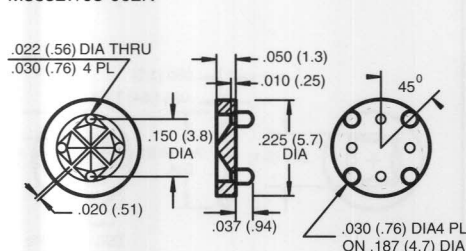


211-040

PRICE CODE: A

A55485/03-002N  
M38527/03-002N

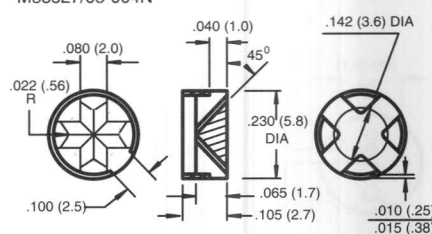
PRICE CODE: A



205-085

A55485/03-004N  
M38527/03-004N

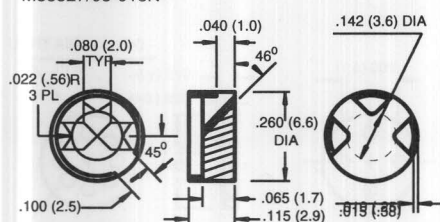
PRICE CODE: A



213-100

A55485/03-013N  
M38527/03-013N

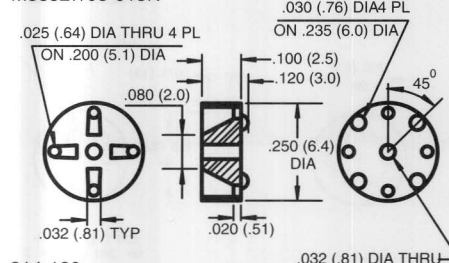
PRICE CODE: A



200-115

A55485/03-015N  
M38527/03-015N

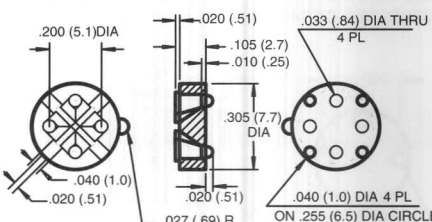
PRICE CODE: A



214-120

A55485/03-010N  
M38527/03-010N

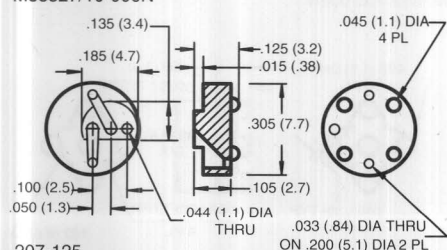
PRICE CODE: A



209-125

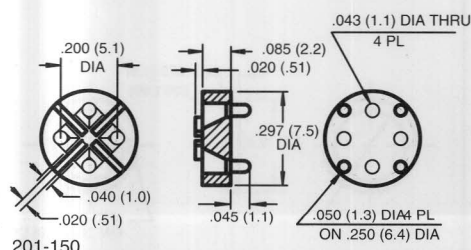
A55485/10-006N  
M38527/10-006N

PRICE CODE: A



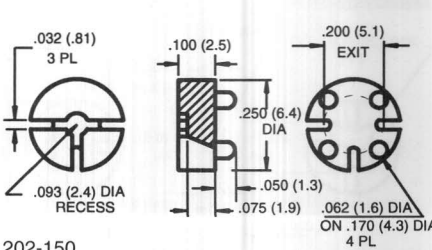
207-125

PRICE CODE: A



201-150

PRICE CODE: A



202-150



# PERM-O-PAD®

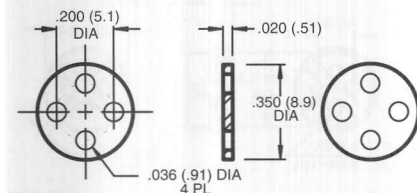
**94V-2**  
U.L. RATED MATERIAL

# Bivar

## TO-5 Mounts

A55485/02-018N  
M38527/02-018N

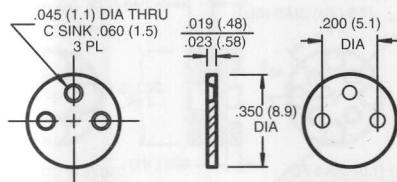
PRICE CODE: A



515-020

A55485/02-019N  
M38527/02-019N

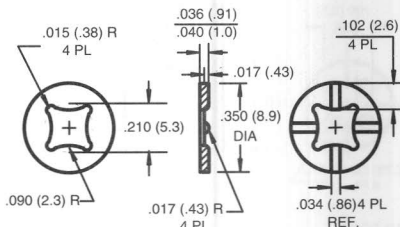
PRICE CODE: A



520-021

A55485/02-013N  
M38527/02-013N

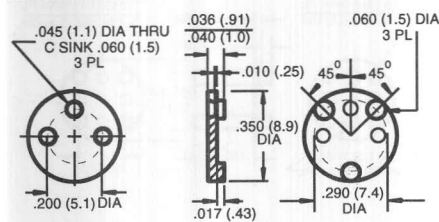
PRICE CODE: A



516-038

A55485/02-014N  
M38527/02-014N

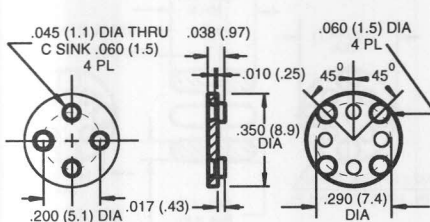
PRICE CODE: A



525-038

A55485/02-019N  
M38527/02-019N

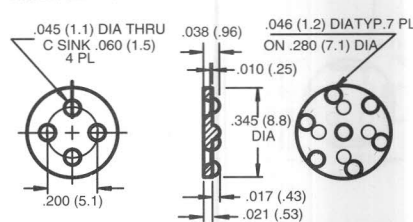
PRICE CODE: A



518-038

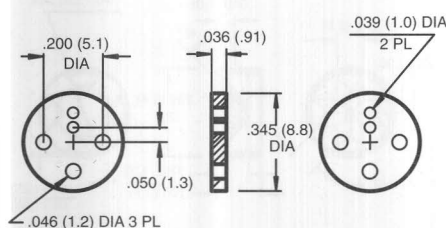
A55485/02-020N  
M38527/02-020N

PRICE CODE: A



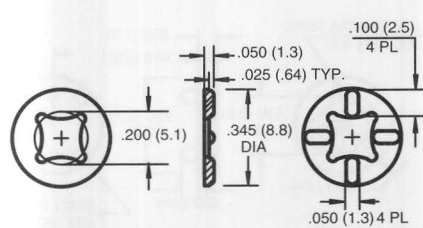
511-038

PRICE CODE: A



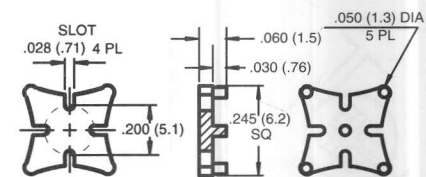
506-038

PRICE CODE: A



532-050

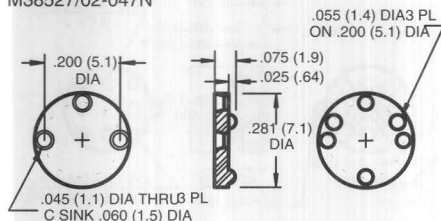
PRICE CODE: A



509-060

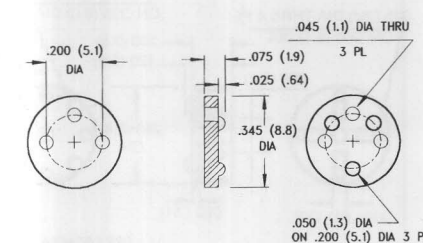
A55485/02-047N  
M38527/02-047N

PRICE CODE: A



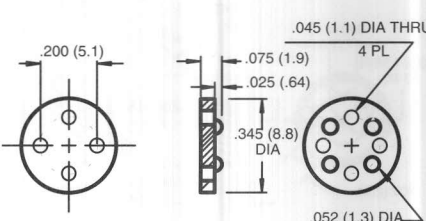
508-075

PRICE CODE: A



501-075

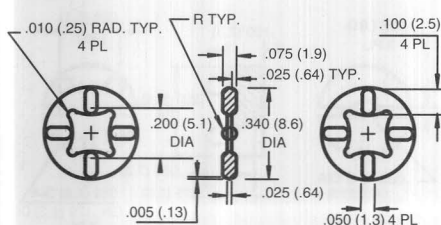
PRICE CODE: A



513-075

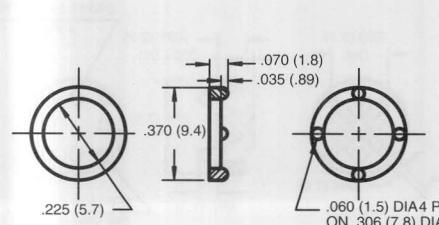
A55485/02-010N  
M38527/02-010N

PRICE CODE: A



503-075

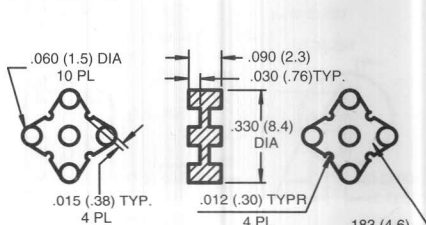
PRICE CODE: A



500-080

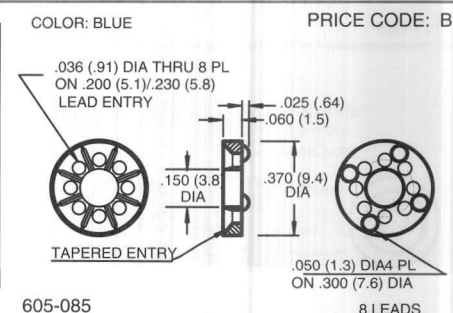
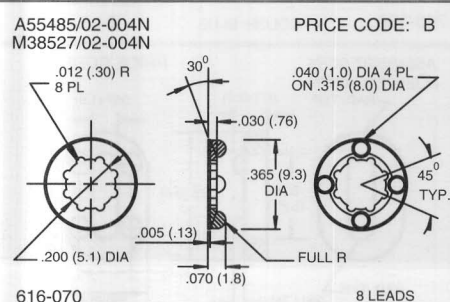
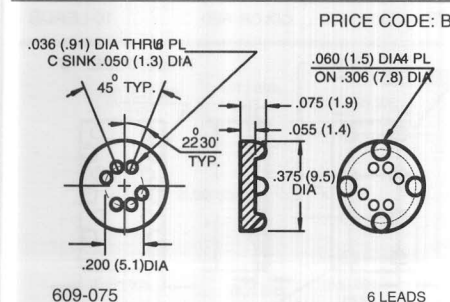
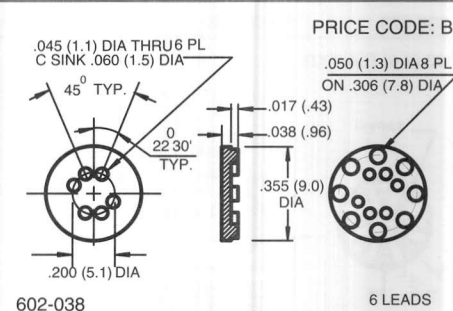
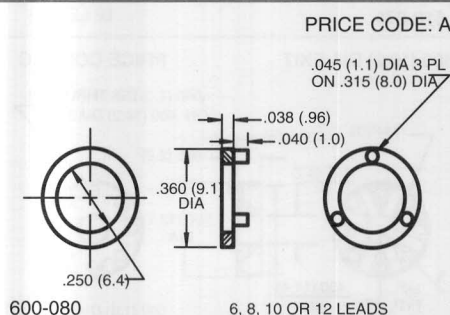
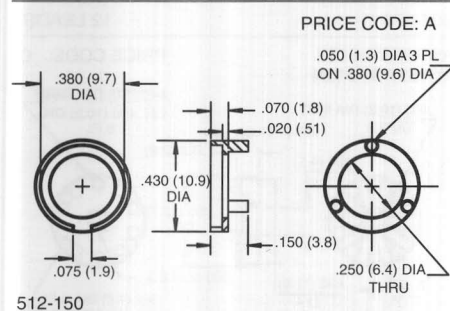
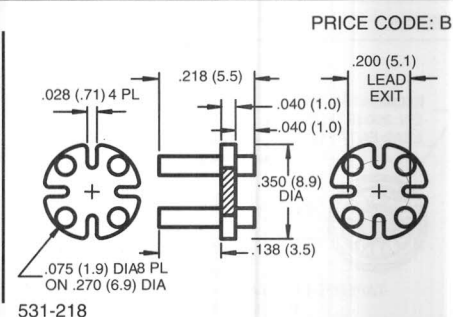
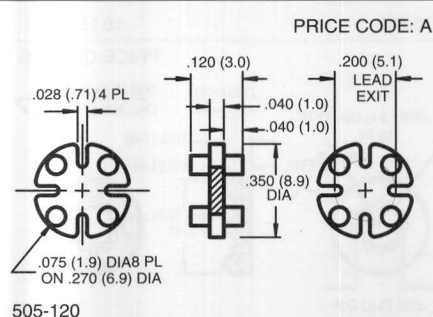
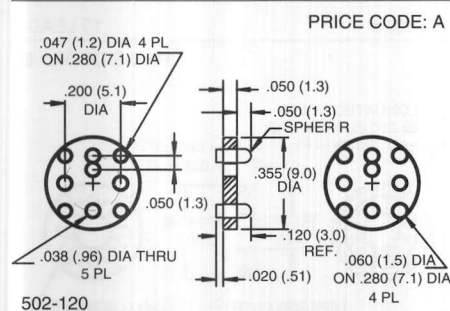
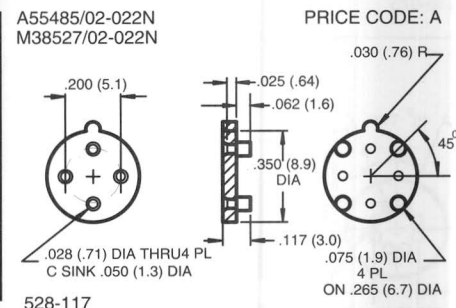
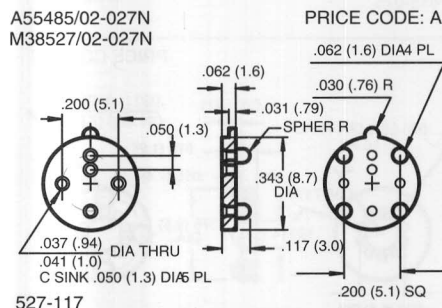
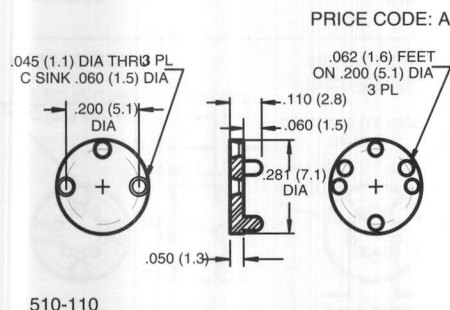
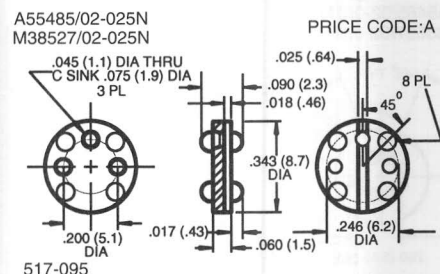
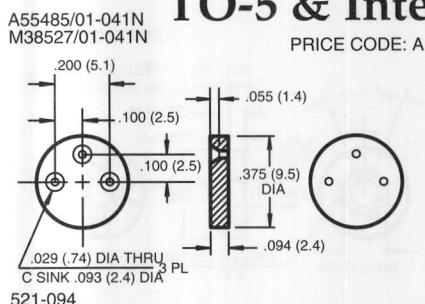
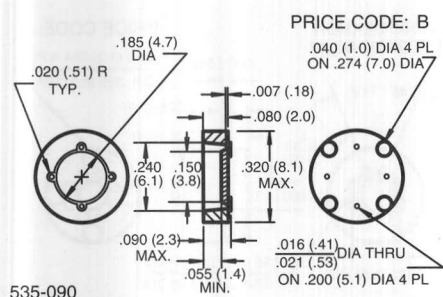
A55485/02-038N  
M38527/02-038N

PRICE CODE: A



526-090

## TO-5 & Integrated Circuit Mounts



# PERM-O-PAD®

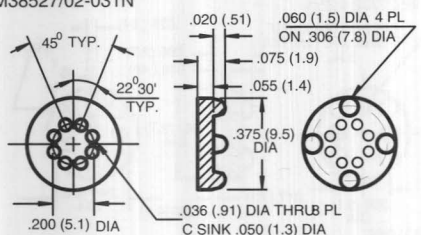
**94V-2**  
U.L. RATED MATERIAL

**Bivar**

## Integrated Circuit Mounts

A55485/02-031N  
M38527/02-031N

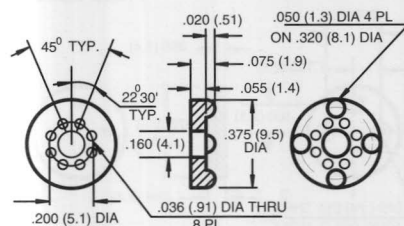
PRICE CODE: B



610-075

8 LEADS

PRICE CODE: B

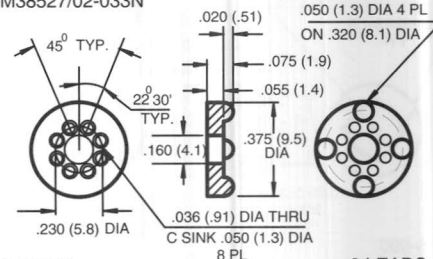


615-075

8 LEADS

A55485/02-033N  
M38527/02-033N

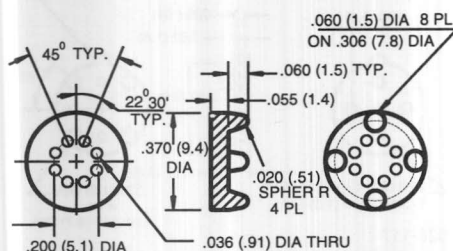
PRICE CODE: B



617-075

8 LEADS

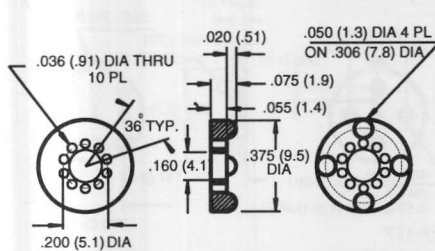
PRICE CODE: B



603-115

8 LEADS

PRICE CODE: B

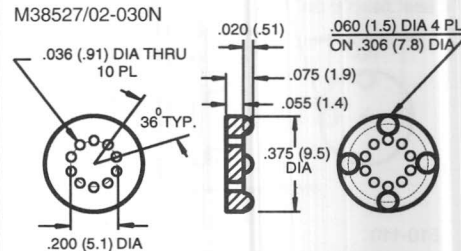


613-075

10 LEADS

A55485/02-030N  
M38527/02-030N

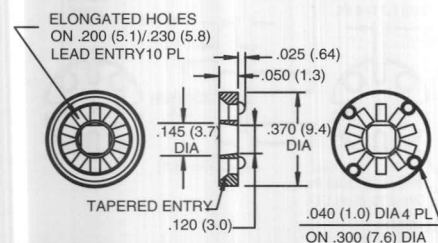
PRICE CODE: B



611-075

10 LEADS

PRICE CODE: B

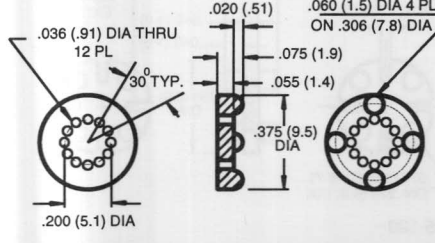


606-075

COLOR: RED

10 LEADS

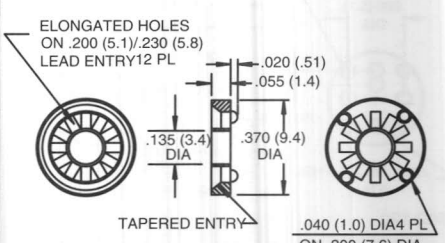
PRICE CODE: B



612-075

12 LEADS

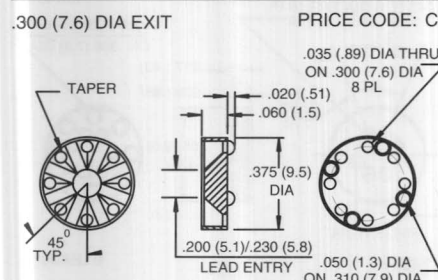
PRICE CODE: B



607-075

12 LEADS

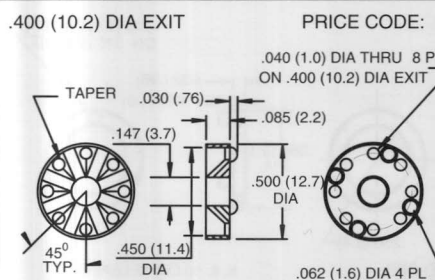
PRICE CODE: C



711-085

8 LEADS

PRICE CODE: C



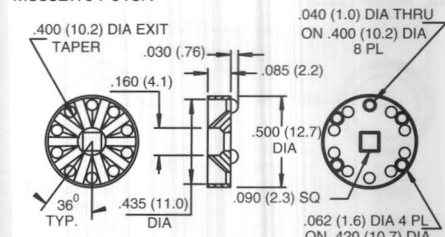
700-130

COLOR: BLUE

8 LEADS

A55485/04-013N  
M38527/04-013N

PRICE CODE: C

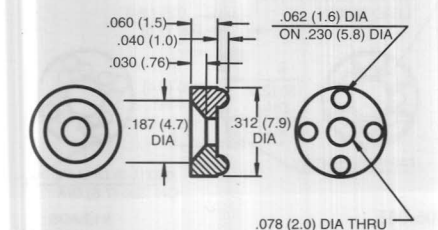


701-130

COLOR: RED

10 LEADS

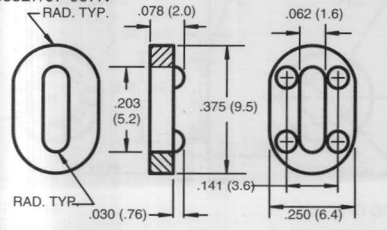
PRICE CODE: B



400-100

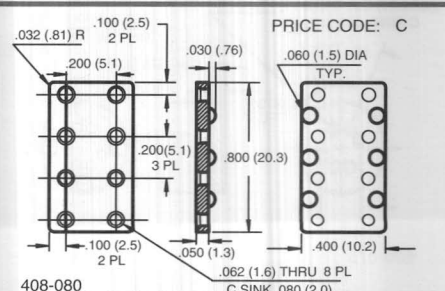
A55485/07-007N  
M38527/07-007N  
RAD. TYP.

PRICE CODE: A



420-078

PRICE CODE: C



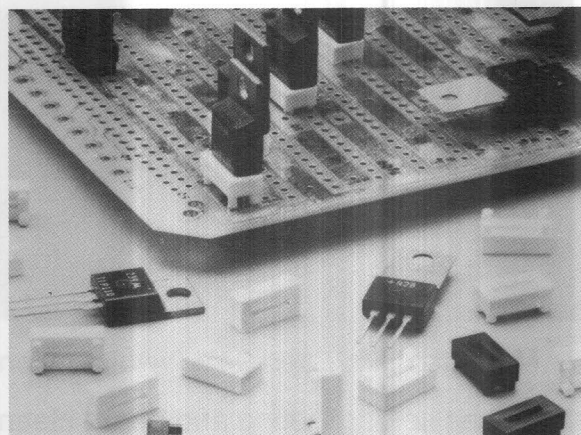
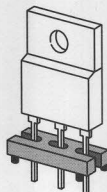
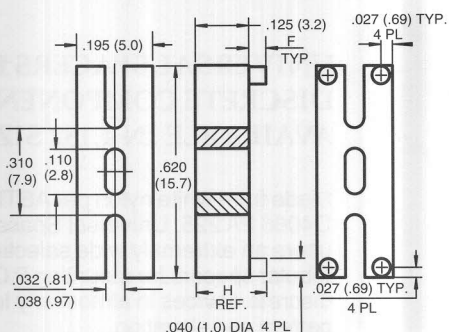
408-080

REFER TO PAGE 45 FOR COMPLETE  
SPECIFICATIONS AND TOLERANCES

CAGE CODE (FSCM) 32559 © COPYRIGHT 1994, BIVAR, INC.  
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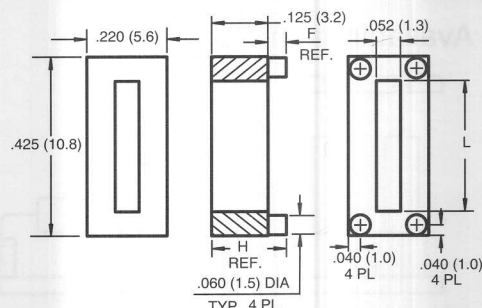
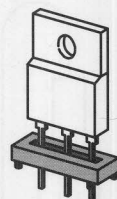
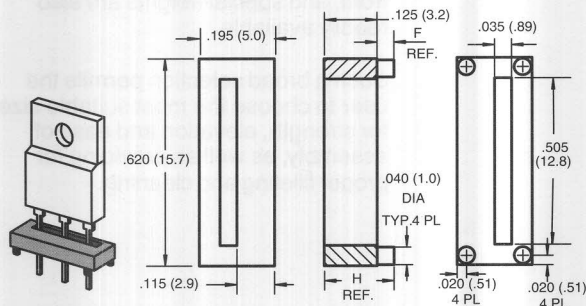


## Power Transistor Mounts & Electrolytic Capacitor Mounts



**426 TRANSISTOR MNT. COLOR: BLACK**

| PART NO. | H          | F          | PRICE CODE |
|----------|------------|------------|------------|
| 426-125  | .125 (3.2) | .000       | J          |
| 426-150  | .150 (3.8) | .025 (.64) | J          |
| 426-175  | .175 (4.4) | .050 (1.3) | J          |
| 426-200  | .200 (5.1) | .075 (1.9) | J          |



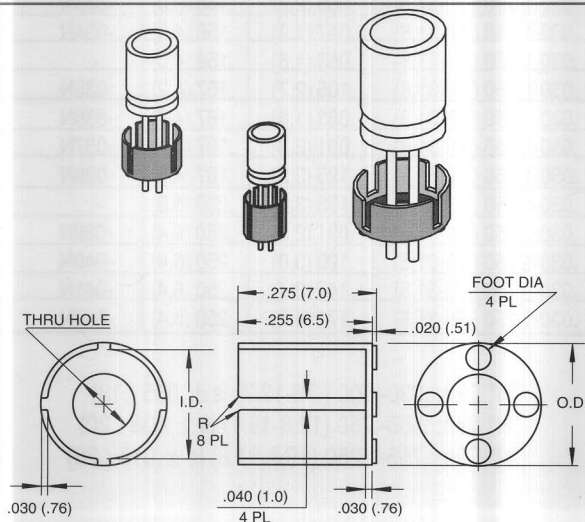
**TO-202/TO-220 PWR. TRANS. MNT.**

| PART    | H NO.      | F          | L          | COLOR | PRICE CODE |
|---------|------------|------------|------------|-------|------------|
| 423-125 | .125 (3.2) | .000       | .255 (6.5) | BLACK | I          |
| 423-150 | .150 (3.8) | .025 (.64) | .255 (6.5) | BLACK | I          |
| 423-175 | .175 (4.4) | .050 (1.3) | .255 (6.5) | BLACK | I          |
| 423-200 | .200 (5.1) | .075 (1.9) | .255 (6.5) | BLACK | I          |
| 424-125 | .125 (3.2) | .000       | .280 (7.1) | WHITE | I          |
| 424-150 | .150 (3.8) | .025 (.64) | .280 (7.1) | WHITE | I          |
| 424-175 | .175 (4.4) | .050 (1.3) | .280 (7.1) | WHITE | I          |
| 424-200 | .200 (5.1) | .075 (1.9) | .280 (7.1) | WHITE | I          |

**TO-219 PWR. TRANS. MNT. COLOR: BLACK**

| PART NO. | H          | F          | PRICE CODE |
|----------|------------|------------|------------|
| 422-125  | .125 (3.2) | .000       | J          |
| 422-150  | .150 (3.8) | .025 (.64) | J          |
| 422-175  | .175 (4.4) | .050 (1.3) | J          |
| 422-200  | .200 (5.1) | .075 (1.9) | J          |

## Electrolytic Capacitor Mounts



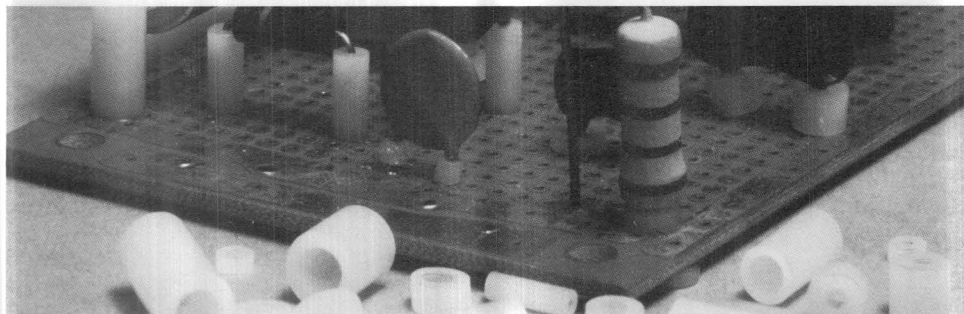
| PART NO. | ECM TYPE | I.D.         | O.D.         | THRU HOLE   | FOOT DIA   | PRICE CODE |
|----------|----------|--------------|--------------|-------------|------------|------------|
| ECM-1    | 5        | .227 (5.8)   | .287 (7.3)   | .125 (3.2)  | .060 (1.5) | A          |
| ECM-2    | 6-6.3    | .273 (6.9)   | .333 (8.5)   | .150 (3.8)  | .070 (1.8) | B          |
| ECM-3    | 8        | .345 (8.8)   | .405 (10.3)  | .225 (5.7)  | .070 (1.8) | F          |
| ECM-4    | 10       | .424 (10.8)  | .484 (12.3)  | .250 (6.4)  | .100 (2.5) | F          |
| ECM-5    | 12.5-13  | .542 (13.8)  | .602 (15.3)  | .350 (8.9)  | .105 (2.7) | G          |
| ECM-6    | 16       | .660 (16.8)  | .720 (18.3)  | .350 (8.9)  | .106 (2.7) | G          |
| ECM-7    | 18       | .738 (18.7)  | .798 (20.3)  | .350 (8.9)  | .106 (2.7) | H          |
| ECM-8    | 20       | .817 (20.8)  | .877 (22.3)  | .449 (11.4) | .118 (3.0) | H          |
| ECM-9    | 22       | .896 (22.8)  | .956 (24.3)  | .449 (11.4) | .118 (3.0) | I          |
| ECM-10   | 25       | 1.014 (25.8) | 1.074 (27.3) | .547 (13.9) | .138 (3.5) | I          |
| ECM-11   | 25.5     | 1.030 (26.2) | 1.090 (27.7) | .547 (13.9) | .138 (3.5) | J          |
| ECM-12   | 30       | 1.210 (30.5) | 1.270 (32.3) | .645 (16.4) | .138 (3.5) | K          |
| ECM-13   | 35       | 1.410 (35.8) | 1.470 (37.3) | .645 (16.4) | .138 (3.5) | C          |

# PERM-O-PAD®

**94V-2**  
U.L. RATED MATERIAL

**Bivar**

## Universal Spacers for Discretes



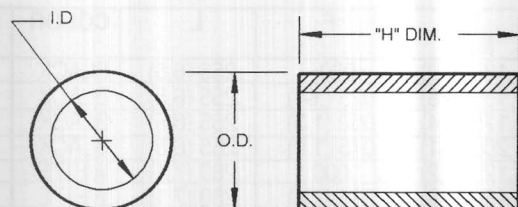
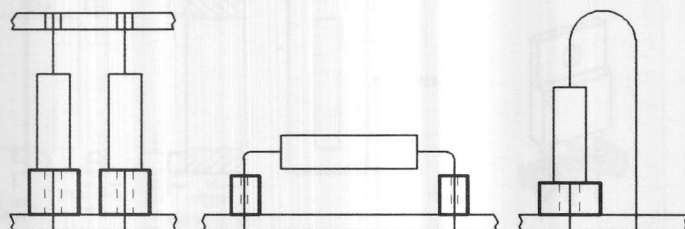
### UNIVERSAL SPACERS FOR DISCRETE COMPONENTS AVAILABLE IN 4,182 SIZES

Made from white nylon per ASTM D4066 PA 225, Universal Spacers give users an extremely wide selection of tubular spacers for mounting P.C.B. discrete devices in almost any lead pattern and elevation.

Seventeen basic I.D./O.D. combinations with heights ranging from .030" (.76) through 1.250" (31.8), in .005" (.13) increments are available from factory stock or within two weeks. There are 4,182 standards to choose from, and special heights are also readily available.

Such a broad selection permits the user to choose the most suitable sizes for strength, elevation and ease of assembly, as well as providing for proper filletting and cleaning.

- Made for U.L. rated 94V-2 white nylon material.
- Makes solder filletting and board cleaning more effective.
- Available from stock.



| "H" DIMENSIONS         | PRICE CODE FOR 901, 902, 937 938 & 939 | PRICE CODE FOR 903, 904, 905, 906, 907 908, 910, 911, 912, 941 & 942 |
|------------------------|--|--|
| .030-.075 (.76-1.9)    | U                                      | W  |
| .080-.150 (2.0-3.8)    | V                                      | W  |
| .155-.230 (4.0-5.8)    | W                                      | X  |
| .235-.310 (6.0-7.9)    | X                                      | Y  |
| .315-.380 (8.0-9.7)    | Y                                      | Z  |
| .385-.495 (9.8-12.6)   | Z                                      | ZZ   |
| .500-.750 (12.7-19.1)  | ZZ                                     | ZZZ  |
| .755-1.250 (19.2-31.8) | ZZZZ                                   | ZZZZ   |

Examples: 901-050 is price code U, 902-100 is price code V  
903-120 is price code W, 901-250 is price code X  
904-250 is price code Y, 903-380 is price code Z

| SERIES | "H" DIMENSION         | I.D.       | O.D.       | A55485/06<br>M38527/06 |
|--------|-----------------------|------------|------------|------------------------|
| 901    | .030-1.250 (.76-31.8) | .028 (.71) | .085 (2.2) | -029N                  |
| 938    | .030-1.250 (.76-31.8) | .032 (.81) | .085 (2.2) | -030N                  |
| 902    | .030-1.250 (.76-31.8) | .032 (.81) | .125 (3.2) | -031N                  |
| 939    | .030-1.250 (.76-31.8) | .047 (1.2) | .125 (3.2) | -032N                  |
| 937    | .030-1.250 (.76-31.8) | .090 (2.3) | .125 (3.2) | -                      |
| 906    | .030-1.250 (.76-31.8) | .085 (2.2) | .148 (3.8) | -033N                  |
| 903    | .030-1.250 (.76-31.8) | .047 (1.2) | .156 (4.0) | -034N                  |
| 940    | .030-1.250 (.76-31.8) | .063 (1.6) | .156 (4.0) | -                      |
| 907    | .030-1.250 (.76-31.8) | .105 (2.7) | .167 (4.2) | -035N                  |
| 904    | .030-1.250 (.76-31.8) | .063 (1.6) | .187 (4.7) | -036N                  |
| 913    | .030-1.250 (.76-31.8) | .091 (2.3) | .187 (4.7) | -037N                  |
| 908    | .030-1.250 (.76-31.8) | .125 (3.2) | .187 (4.7) | -038N                  |
| 941    | .030-1.250 (.76-31.8) | .135 (3.4) | .230 (5.8) | -                      |
| 910    | .030-1.250 (.76-31.8) | .091 (2.3) | .250 (6.4) | -039N                  |
| 911    | .030-1.250 (.76-31.8) | .120 (3.0) | .250 (6.4) | -040N                  |
| 905    | .030-1.250 (.76-31.8) | .147 (3.7) | .250 (6.4) | -041N                  |
| 912    | .030-1.250 (.76-31.8) | .171 (4.3) | .250 (6.4) | -042N                  |

"H" Dim: .030-.500 (.76-12.7) is  $\pm .005$  (.13)

"H" Dim: .505-.750 (12.8-19.1) is  $\pm .008$  (.20)

"H" Dim: .755-1.250 (19.2-31.8) is  $\pm .015$  (.38)



# mm - CHART

| MM | INCH  | SERIES 901 | SERIES 938 | SERIES 902 | SERIES 939 | SERIES 937 | PRICE CODE | SERIES 906 | SERIES 903 | SERIES 940 | SERIES 907 | PRICE CODE |
|----|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1  | .039  | 901-1MM    | 938-1MM    | 902-1MM    | 939-1MM    | 937-1MM    | U          | 906-1MM    | 903-1MM    | 940-1MM    | 907-1MM    | W          |
| 2  | .079  | 901-2MM    | 938-2MM    | 902-2MM    | 939-2MM    | 937-2MM    | V          | 906-2MM    | 903-2MM    | 940-2MM    | 907-2MM    | W          |
| 3  | .118  | 901-3MM    | 938-3MM    | 902-3MM    | 939-3MM    | 937-3MM    | V          | 906-3MM    | 903-3MM    | 940-3MM    | 907-3MM    | W          |
| 4  | .158  | 901-4MM    | 938-4MM    | 902-4MM    | 939-4MM    | 937-4MM    | W          | 906-4MM    | 903-4MM    | 940-4MM    | 907-4MM    | X          |
| 5  | .197  | 901-5MM    | 938-5MM    | 902-5MM    | 939-5MM    | 937-5MM    | W          | 906-5MM    | 903-5MM    | 940-5MM    | 907-5MM    | X          |
| 6  | .236  | 901-6MM    | 938-6MM    | 902-6MM    | 939-6MM    | 937-6MM    | X          | 906-6MM    | 903-6MM    | 940-6MM    | 907-6MM    | Y          |
| 7  | .276  | 901-7MM    | 938-7MM    | 902-7MM    | 939-7MM    | 937-7MM    | X          | 906-7MM    | 903-7MM    | 940-7MM    | 907-7MM    | Y          |
| 8  | .315  | 901-8MM    | 938-8MM    | 902-8MM    | 939-8MM    | 937-8MM    | Y          | 906-8MM    | 903-8MM    | 940-8MM    | 907-8MM    | Z          |
| 9  | .354  | 901-9MM    | 938-9MM    | 902-9MM    | 939-9MM    | 937-9MM    | Y          | 906-9MM    | 903-9MM    | 940-9MM    | 907-9MM    | Z          |
| 10 | .394  | 901-10MM   | 938-10MM   | 902-10MM   | 939-10MM   | 937-10MM   | Z          | 906-10MM   | 903-10MM   | 940-10MM   | 907-10MM   | ZZ         |
| 11 | .433  | 901-11MM   | 938-11MM   | 902-11MM   | 939-11MM   | 937-11MM   | Z          | 906-11MM   | 903-11MM   | 940-11MM   | 907-11MM   | ZZ         |
| 12 | .472  | 901-12MM   | 938-12MM   | 902-12MM   | 939-12MM   | 937-12MM   | Z          | 906-12MM   | 903-12MM   | 940-12MM   | 907-12MM   | ZZ         |
| 13 | .512  | 901-13MM   | 938-13MM   | 902-13MM   | 939-13MM   | 937-13MM   | ZZ         | 906-13MM   | 903-13MM   | 940-13MM   | 907-13MM   | ZZZ        |
| 14 | .551  | 901-14MM   | 938-14MM   | 902-14MM   | 939-14MM   | 937-14MM   | ZZ         | 906-14MM   | 903-14MM   | 940-14MM   | 907-14MM   | ZZZ        |
| 15 | .591  | 901-15MM   | 938-15MM   | 902-15MM   | 939-15MM   | 937-15MM   | ZZ         | 906-15MM   | 903-15MM   | 940-15MM   | 907-15MM   | ZZZ        |
| 16 | .630  | 901-16MM   | 938-16MM   | 902-16MM   | 939-16MM   | 937-16MM   | ZZ         | 906-16MM   | 903-16MM   | 940-16MM   | 907-16MM   | ZZZ        |
| 17 | .669  | 901-17MM   | 938-17MM   | 902-17MM   | 939-17MM   | 937-17MM   | ZZ         | 906-17MM   | 903-17MM   | 940-17MM   | 907-17MM   | ZZZ        |
| 18 | .709  | 901-18MM   | 938-18MM   | 902-18MM   | 939-18MM   | 937-18MM   | ZZ         | 906-18MM   | 903-18MM   | 940-18MM   | 907-18MM   | ZZZ        |
| 19 | .748  | 901-19MM   | 938-19MM   | 902-19MM   | 939-19MM   | 937-19MM   | ZZ         | 906-19MM   | 903-19MM   | 940-19MM   | 907-19MM   | ZZZ        |
| 20 | .787  | 901-20MM   | 938-20MM   | 902-20MM   | 939-20MM   | 937-20MM   | ZZZZ       | 906-20MM   | 903-20MM   | 940-20MM   | 907-20MM   | ZZZZ       |
| 21 | .827  | 901-21MM   | 938-21MM   | 902-21MM   | 939-21MM   | 937-21MM   | ZZZZ       | 906-21MM   | 903-21MM   | 940-21MM   | 907-21MM   | ZZZZ       |
| 22 | .886  | 901-22MM   | 938-22MM   | 902-22MM   | 939-22MM   | 937-22MM   | ZZZZ       | 906-22MM   | 903-22MM   | 940-22MM   | 907-22MM   | ZZZZ       |
| 23 | .906  | 901-23MM   | 938-23MM   | 902-23MM   | 939-23MM   | 937-23MM   | ZZZZ       | 906-23MM   | 903-23MM   | 940-23MM   | 907-23MM   | ZZZZ       |
| 24 | .945  | 901-24MM   | 938-24MM   | 902-24MM   | 939-24MM   | 937-24MM   | ZZZZ       | 906-24MM   | 903-24MM   | 940-24MM   | 907-24MM   | ZZZZ       |
| 25 | .984  | 901-25MM   | 938-25MM   | 902-25MM   | 939-25MM   | 937-25MM   | ZZZZ       | 906-25MM   | 903-25MM   | 940-25MM   | 907-25MM   | ZZZZ       |
| 26 | 1.024 | 901-26MM   | 938-26MM   | 902-26MM   | 939-26MM   | 937-26MM   | ZZZZ       | 906-26MM   | 903-26MM   | 940-26MM   | 907-26MM   | ZZZZ       |

**NOTE: MM is used rather than mm for millimeter(s) for computer compatibility.**

| MM | INCH  | SERIES 904 | SERIES 913 | SERIES 908 | SERIES 941 | SERIES 910 | SERIES 911 | SERIES 905 | SERIES 912 | PRICE CODE |
|----|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1  | .039  | 904-1MM    | 913-1MM    | 908-1MM    | 941-1MM    | 910-1MM    | 911-1MM    | 905-1MM    | 912-1MM    | W          |
| 2  | .079  | 904-2MM    | 913-2MM    | 908-2MM    | 941-2MM    | 910-2MM    | 911-2MM    | 905-2MM    | 912-2MM    | W          |
| 3  | .118  | 904-3MM    | 913-3MM    | 908-3MM    | 941-3MM    | 910-3MM    | 911-3MM    | 905-3MM    | 912-3MM    | W          |
| 4  | .158  | 904-4MM    | 913-4MM    | 908-4MM    | 941-4MM    | 910-4MM    | 911-4MM    | 905-4MM    | 912-4MM    | X          |
| 5  | .197  | 904-5MM    | 913-5MM    | 908-5MM    | 941-5MM    | 910-5MM    | 911-5MM    | 905-5MM    | 912-5MM    | X          |
| 6  | .236  | 904-6MM    | 913-6MM    | 908-6MM    | 941-6MM    | 910-6MM    | 911-6MM    | 905-6MM    | 912-6MM    | Y          |
| 7  | .276  | 904-7MM    | 913-7MM    | 908-7MM    | 941-7MM    | 910-7MM    | 911-7MM    | 905-7MM    | 912-7MM    | Y          |
| 8  | .315  | 904-8MM    | 913-8MM    | 908-8MM    | 941-8MM    | 910-8MM    | 911-8MM    | 905-8MM    | 912-8MM    | Z          |
| 9  | .354  | 904-9MM    | 913-9MM    | 908-9MM    | 941-9MM    | 910-9MM    | 911-9MM    | 905-9MM    | 912-9MM    | Z          |
| 10 | .394  | 904-10MM   | 913-10MM   | 908-10MM   | 941-10MM   | 910-10MM   | 911-10MM   | 905-10MM   | 912-10MM   | ZZ         |
| 11 | .433  | 904-11MM   | 913-11MM   | 908-11MM   | 941-11MM   | 910-11MM   | 911-11MM   | 905-11MM   | 912-11MM   | ZZ         |
| 12 | .472  | 904-12MM   | 913-12MM   | 908-12MM   | 941-12MM   | 910-12MM   | 911-12MM   | 905-12MM   | 912-12MM   | ZZ         |
| 13 | .512  | 904-13MM   | 913-13MM   | 908-13MM   | 941-13MM   | 910-13MM   | 911-13MM   | 905-13MM   | 912-13MM   | ZZZ        |
| 14 | .551  | 904-14MM   | 913-14MM   | 908-14MM   | 941-14MM   | 910-14MM   | 911-14MM   | 905-14MM   | 912-14MM   | ZZZ        |
| 15 | .591  | 904-15MM   | 913-15MM   | 908-15MM   | 941-15MM   | 910-15MM   | 911-15MM   | 905-15MM   | 912-15MM   | ZZZ        |
| 16 | .630  | 904-16MM   | 913-16MM   | 908-16MM   | 941-16MM   | 910-16MM   | 911-16MM   | 905-16MM   | 912-16MM   | ZZZ        |
| 17 | .669  | 904-17MM   | 913-17MM   | 908-17MM   | 941-17MM   | 910-17MM   | 911-17MM   | 905-17MM   | 912-17MM   | ZZZ        |
| 18 | .709  | 904-18MM   | 913-18MM   | 908-18MM   | 941-18MM   | 910-18MM   | 911-18MM   | 905-18MM   | 912-18MM   | ZZZ        |
| 19 | .748  | 904-19MM   | 913-19MM   | 908-19MM   | 941-19MM   | 910-19MM   | 911-19MM   | 905-19MM   | 912-19MM   | ZZZ        |
| 20 | .787  | 904-20MM   | 913-20MM   | 908-20MM   | 941-20MM   | 910-20MM   | 911-20MM   | 905-20MM   | 912-20MM   | ZZZZ       |
| 21 | .827  | 904-21MM   | 913-21MM   | 908-21MM   | 941-21MM   | 910-21MM   | 911-21MM   | 905-21MM   | 912-21MM   | ZZZZ       |
| 22 | .886  | 904-22MM   | 913-22MM   | 908-22MM   | 941-22MM   | 910-22MM   | 911-22MM   | 905-22MM   | 912-22MM   | ZZZZ       |
| 23 | .906  | 904-23MM   | 913-23MM   | 908-23MM   | 941-23MM   | 910-23MM   | 911-23MM   | 905-23MM   | 912-23MM   | ZZZZ       |
| 24 | .945  | 904-24MM   | 913-24MM   | 908-24MM   | 941-24MM   | 910-24MM   | 911-24MM   | 905-24MM   | 912-24MM   | ZZZZ       |
| 25 | .984  | 904-25MM   | 913-25MM   | 908-25MM   | 941-25MM   | 910-25MM   | 911-25MM   | 905-25MM   | 912-25MM   | ZZZZ       |
| 26 | 1.024 | 904-26MM   | 913-26MM   | 908-26MM   | 941-26MM   | 910-26MM   | 911-26MM   | 905-26MM   | 912-26MM   | ZZZZ       |



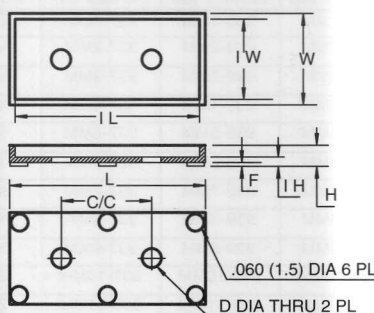
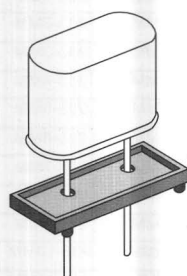
## PERM-O-PAD®

**94V-2**  
U.L. RATED MATERIAL

### Crystal Mounts & Insulators/Miscellaneous Devices

#### Crystal Mounts

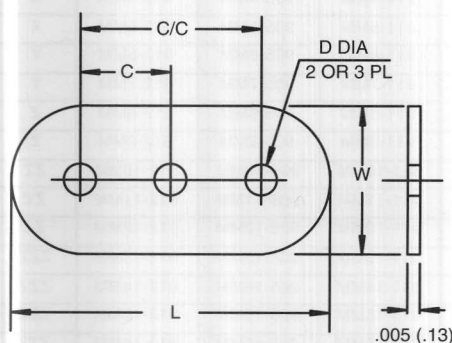
Material: White Nylon 6/6



| PART NO. | L           | IL          | W           | IW         | C/C         | D          | IH         | F          | H          | CASE STYLE | PRICE CODE |
|----------|-------------|-------------|-------------|------------|-------------|------------|------------|------------|------------|------------|------------|
| 470-015  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .028 (.71) | .015 (.38) | .000       | .050 (1.3) | I          | H          |
| 470-025  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .028 (.71) | .025 (.64) | .010 (.25) | .060 (1.5) |            | H          |
| 470-035  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .028 (.71) | .035 (.89) | .020 (.51) | .070 (1.8) |            | H          |
| 470-045  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .028 (.71) | .045 (1.1) | .030 (.76) | .080 (2.0) |            | H          |
| 471-015  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .050 (1.3) | .015 (.38) | .000       | .050 (1.3) | II         | H          |
| 471-025  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .050 (1.3) | .025 (.64) | .010 (.25) | .060 (1.5) |            | H          |
| 471-035  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .050 (1.3) | .035 (.89) | .020 (.51) | .070 (1.8) |            | H          |
| 471-045  | .495 (12.6) | .455 (11.6) | .245 (6.2)  | .205 (5.2) | .192 (4.9)  | .050 (1.3) | .045 (1.1) | .030 (.76) | .080 (2.0) |            | H          |
| 472-015  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .040 (1.0) | .015 (.38) | .000       | .075 (1.9) | III        | J          |
| 472-025  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .040 (1.0) | .025 (.64) | .010 (.25) | .085 (2.2) |            | J          |
| 472-035  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .040 (1.0) | .035 (.89) | .020 (.51) | .095 (2.4) |            | J          |
| 472-045  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .040 (1.0) | .045 (1.1) | .030 (.76) | .105 (2.7) |            | J          |
| 473-015  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .060 (1.5) | .015 (.38) | .000       | .075 (1.9) | IV         | J          |
| 473-025  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .060 (1.5) | .025 (.64) | .010 (.25) | .085 (2.2) |            | J          |
| 473-035  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .060 (1.5) | .035 (.89) | .020 (.51) | .095 (2.4) |            | J          |
| 473-045  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .060 (1.5) | .045 (1.1) | .030 (.76) | .105 (2.7) |            | J          |
| 474-015  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .110 (2.8) | .015 (.38) | .000       | .075 (1.9) | V          | J          |
| 474-025  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .110 (2.8) | .025 (.64) | .010 (.25) | .085 (2.2) |            | J          |
| 474-035  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .110 (2.8) | .035 (.89) | .020 (.51) | .095 (2.4) |            | J          |
| 474-045  | .825 (21.0) | .775 (19.7) | .425 (10.8) | .375 (9.5) | .486 (12.3) | .110 (2.8) | .045 (1.1) | .030 (.76) | .105 (2.7) |            | J          |

#### Crystal Insulators

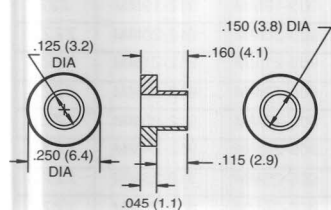
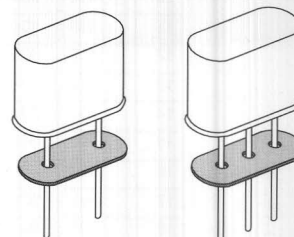
Material: Dupont Mylar



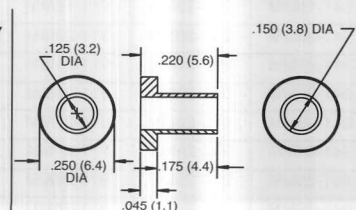
| PART NO.       | C          | C/C         | L           | D          | W          | CASE STYLE | PRICE CODE |
|----------------|------------|-------------|-------------|------------|------------|------------|------------|
| CI-148-028     | -          | .148 (3.8)  | .325 (8.3)  | .028 (.71) | .145 (3.7) | VI         | X          |
| CI-192-028-3   | .096 (2.4) | .192 (4.9)  | .465 (11.8) | .028 (.71) | .219 (5.6) | I          | X          |
| CI-192-028 SR* | -          | .192 (4.9)  | .465 (11.8) | -          | .219 (5.6) | I          | X          |
| CI-192-028     | -          | .192 (4.9)  | .465 (11.8) | .028 (.71) | .219 (5.6) | I          | X          |
| CI-192-050     | -          | .192 (4.9)  | .465 (11.8) | .050 (1.3) | .219 (5.6) | II         | X          |
| CI-486-040     | -          | .486 (12.3) | .775 (19.7) | .040 (1.0) | .375 (9.5) | III        | Y          |
| CI-486-060     | -          | .486 (12.3) | .775 (19.7) | .060 (1.5) | .375 (9.5) | IV         | Y          |
| CI-486-105     | -          | .486 (12.3) | .775 (19.7) | .105 (2.7) | .375 (9.5) | V          | Y          |

\* SELF RETAINING INSULATOR

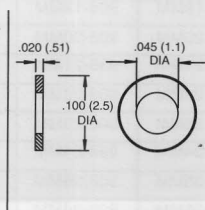
| CASE STYLE | USE WITH                   |
|------------|----------------------------|
| I          | HC-18/U, HC-43/U & HC-49/U |
| II         | HC-25/U, HC-42/U & HC-50/U |
| III        | HC-33/U, HC-47/U & HC-51/U |
| IV         | HC-6/U, HC-36/U & HC-48/U  |
| V          | HC-17/U                    |
| VI         | HC-80/U                    |



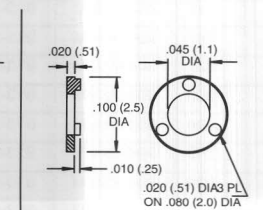
405-160



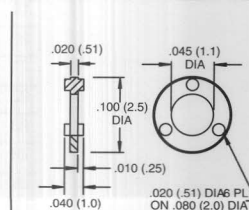
407-220



412-020



413-030



419-040

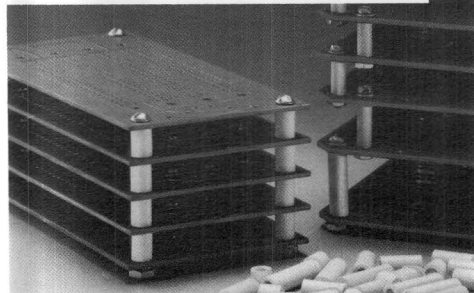
# Products for Manufacturing & Assembly

## Unique Answers To Common Problems.

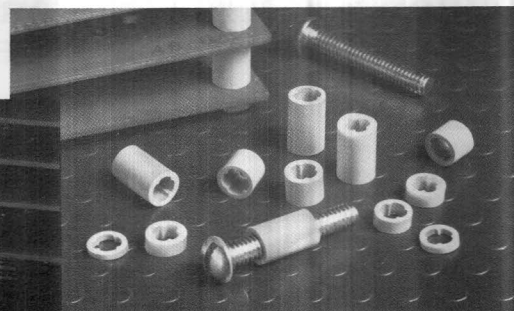
With a wealth of experience in answering manufacturing and assembly needs across the PCB industry, Bivar introduces several significant new products to answer even broader needs where PCBs are used.

Bivar's new PLUG-O-HOLE™ Hole Plugs are an excellent illustration of listening to the industry. Simple yet functional, these innovative devices answer a pressing need for prevention of the deposition of solder where it isn't wanted. Examine Bivar's Self-Retaining Screw Spacers, again designed with time-savings & practical solutions in mind.

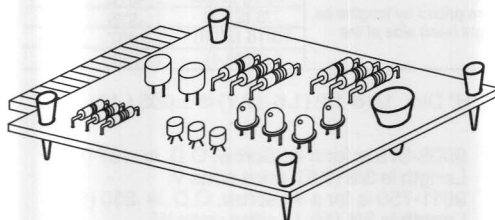
It's an entirely new section in this catalog, giving evidence of an added value to manufacturing, production, quality and material handling needs. And, like any Bivar product, each is stocked in-depth for immediate shipment, perhaps one of the most critical factors in the manufacturing and assembly area. Of course, they're economical too, saving rework or rejection costs, while keeping the idea simple.



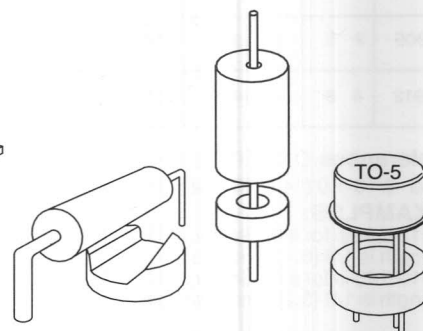
**Standard Screw Spacers** Rigid tubular spacers for mounting and stacking in both fractional and millimeter sizes. See page 60.



**Self-Retaining Screw Spacers** minimize handling during assembly, provide an excellent solution for automatic insertion. See page 61.



**PLUG-O-HOLE™** Hole Plugs offer an economical solution for preventing solder from flowing through holes to the upper side of the PCB during the soldering process. See below.



**DISS-O-PAD** Wash away Spacers provide accurate, uniform component mounting and dissolve in warm or hot water without a trace of residue.. See page 62,63,64 & 65.

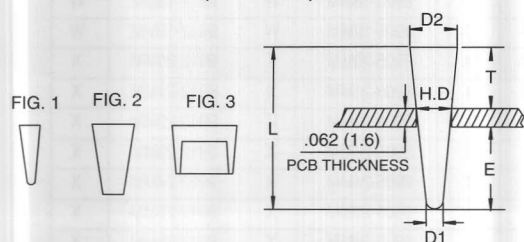
## PLUG-O-HOLE™

### Printed Circuit Board Hole Plugs

- Prevents solder from reaching top of PCBs
- Simple press-in assembly without tools, easy to remove
- Withstands wave, dip or hand soldering temperatures; will not contaminate solder
- Low in cost, re-usable, available from stock
- 9 standard sizes fit holes from .016" - .500" (.41-12.7) diameter

Designed to prevent solder from flowing through unused holes in PCBs, Bivar's PLUG-O-HOLE™ PCB hole plugs offer an economical solution to keep unwanted solder from reaching the top surfaces of PCBs. Low in cost, these convenient hole plugs are tapered for a snug fit, yet are simple to remove. Made of temperature resistant material, they will withstand flow, dip or hand soldering and are re-usable.

9 Standard sizes, ranging from .016" to .500" diameter, will fit most PCB holes. Protrusion above and below board surfaces will not interfere with solder process baths or conveyors.



**COLOR: BLACK**

| PART NO. | FIG. | D1          | H.D.        | D2          | T          | E           | L            | PRICE CODE |
|----------|------|-------------|-------------|-------------|------------|-------------|--------------|------------|
| POH-1    | 1    | .012 (0.3)  | .025 (0.6)  | .047 (1.2)  | 5/16 (7.9) | 1/8 (3.2)   | 1/2 (12.7)   | Z          |
| POH-2    | 1    | .015 (0.4)  | .050 (1.3)  | .082 (2.1)  | 5/16 (7.9) | 11/64 (4.4) | 35/64 (13.9) | Z          |
| POH-3S   | 2    | .040 (1.0)  | .100 (2.5)  | .160 (4.1)  | 5/16 (7.9) | 7/32 (5.6)  | 19/32 (15.1) | I          |
| POH-4S   | 2    | .090 (2.3)  | .150 (3.8)  | .209 (5.3)  | 5/16 (7.9) | 7/32 (5.6)  | 19/32 (15.1) | K          |
| POH-5S   | 2    | .140 (3.6)  | .200 (5.1)  | .261 (6.6)  | 5/16 (7.9) | 7/32 (5.6)  | 19/32 (15.1) | C          |
| POH-6S   | 2    | .200 (5.1)  | .250 (6.4)  | .309 (7.8)  | 5/16 (7.9) | 11/64 (4.4) | 35/64 (13.9) | BB         |
| POH-7S   | 3    | .261 (6.6)  | .312 (7.9)  | .355 (9.0)  | 1/4 (6.4)  | 11/64 (4.4) | 31/64 (12.3) | CC         |
| POH-8S   | 3    | .320 (8.1)  | .375 (9.5)  | .420 (10.7) | 1/4 (6.4)  | 11/64 (4.4) | 31/64 (12.3) | EE         |
| POH-9S   | 3    | .443 (11.3) | .500 (12.7) | .539 (13.7) | 1/4 (6.4)  | 11/64 (4.4) | 31/64 (12.3) | KK         |

# SCREW SPACERS

**94V-2**  
U.L. RATED MATERIAL

**Bivar**

## Nylon Spacers For Standard Screw Sizes

### 96 STANDARD FRACTIONAL SIZES

- Fit most commonly used screws
- 6 different ID/OD combinations in fractional and metric sizes
- Easy assembly design
- Inexpensive way to provide board support

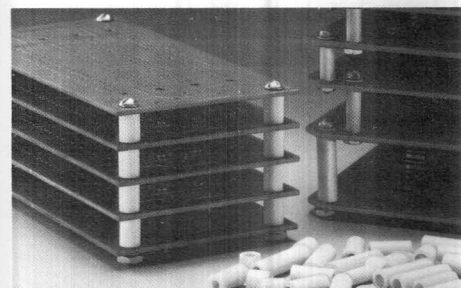
| SERIES | SCREW SIZE | I.D.       | O.D.       |  | "H" Dim.     | DASH NO. | PRICE CODE |
|--------|------------|------------|------------|--|--------------|----------|------------|
| 9913   | # 2        | .091 (2.3) | .187 (4.7) | Available in increments of 1/16 (1.6) from 1/16 (1.6) through 1.0 (25.4) heights.      | 1/16 (1.6)   | -062     | U          |
|        |            |            |            |  | 1/8 (3.2)    | -125     | U          |
|        |            |            |            |  | 3/16 (4.8)   | -187     | U          |
| 9910   | # 2        | .091 (2.3) | .250 (6.4) |  | 1/4 (6.4)    | -250     | U          |
|        |            |            |            |  | 5/16 (7.9)   | -312     | U          |
|        |            |            |            |  | 3/8 (9.5)    | -375     | V          |
| 9908   | # 4        | .125 (3.2) | .187 (4.7) | Specify height in thousandths by adding-xxx to Series numbers. See chart and examples. | 7/16 (11.1)  | -437     | V          |
|        |            |            |            |  | 1/2 (12.7)   | -500     | V          |
|        |            |            |            |  | 9/16 (14.3)  | -562     | V          |
| 9911   | # 4        | .120 (3.0) | .250 (6.4) |  | 5/8 (15.9)   | -625     | W          |
|        |            |            |            |  | 11/16 (17.5) | -687     | W          |
|        |            |            |            |  | 3/4 (19.1)   | -750     | W          |
| 9905   | # 6        | .147 (3.7) | .250 (6.4) | All Series are priced by lengths as shown on right hand side of the chart.             | 13/16 (20.6) | -812     | X          |
|        |            |            |            |  | 7/8 (22.2)   | -875     | X          |
|        |            |            |            |  | 15/16 (23.8) | -937     | X          |
| 9912   | # 8        | .171 (4.3) | .250 (6.4) |  | 1.0 (25.4)   | -1000    | X          |

**Tolerances:** O.D.  $\pm .005$  (.13), I.D.  $\pm .005$  (.13) "H" Dim: 1/16-1/2 (1.6-12.7) is  $\pm .005$  (.13) and 9/16-1.0 (14.3-25.4) is  $\pm .010$  (.25)

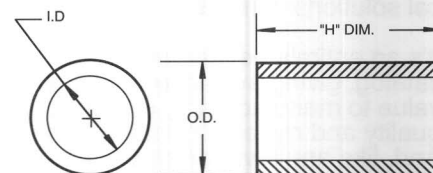
#### EXAMPLES:

9913-250 is for a #2 Screw, O.D. is .187 (4.7)  
Length is 1/4 (6.4), price code U.  
9910-125 is for a #2 Screw, O.D. is .250 (6.4)  
Length is 1/8 (3.2), price code U.

9908-375 is for a #4 Screw, O.D. is .187 (4.7)  
Length is 3/8 (9.5), price code V.  
9911-750 is for a #4 screw, O.D. is .250 (6.4)  
Length is 3/4 (19.1), price code W.  
9912-187 is for a #8 screw, O.D. is .250 (6.4)  
Length is 3/16 (4.8), price code U.



**MATERIAL SPECIFICATIONS :**  
White Nylon per ASTM D4066  
PA225



#### MM CHART

| MM | INCH  | SCREW SIZE #2 | PRICE CODE | SCREW SIZE #2 | PRICE CODE | SCREW SIZE #4 | PRICE CODE | SCREW SIZE #4 | PRICE CODE | SCREW SIZE #6 (M 3.5) | PRICE CODE | SCREW SIZE #8 | PRICE CODE |
|----|-------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|-----------------------|------------|---------------|------------|
| 1  | .039  | 9913-1MM      | U          | 9910-1MM      | U          | 9908-1MM      | U          | 9911-1MM      | U          | 9905-1MM              | U          | 9912-1MM      | U          |
| 2  | .079  | 9913-2MM      | U          | 9910-2MM      | U          | 9908-2MM      | U          | 9911-2MM      | U          | 9905-2MM              | U          | 9912-2MM      | U          |
| 3  | .118  | 9913-3MM      | U          | 9910-3MM      | U          | 9908-3MM      | U          | 9911-3MM      | U          | 9905-3MM              | U          | 9912-3MM      | U          |
| 4  | .158  | 9913-4MM      | U          | 9910-4MM      | U          | 9908-4MM      | U          | 9911-4MM      | U          | 9905-4MM              | U          | 9912-4MM      | U          |
| 5  | .197  | 9913-5MM      | U          | 9910-5MM      | U          | 9908-5MM      | U          | 9911-5MM      | U          | 9905-5MM              | U          | 9912-5MM      | U          |
| 6  | .236  | 9913-6MM      | U          | 9910-6MM      | U          | 9908-6MM      | U          | 9911-6MM      | U          | 9905-6MM              | U          | 9912-6MM      | U          |
| 7  | .276  | 9913-7MM      | U          | 9910-7MM      | U          | 9908-7MM      | U          | 9911-7MM      | U          | 9905-7MM              | U          | 9912-7MM      | U          |
| 8  | .315  | 9913-8MM      | V          | 9910-8MM      | V          | 9908-8MM      | V          | 9911-8MM      | V          | 9905-8MM              | V          | 9912-8MM      | V          |
| 9  | .354  | 9913-9MM      | V          | 9910-9MM      | V          | 9908-9MM      | V          | 9911-9MM      | V          | 9905-9MM              | V          | 9912-9MM      | V          |
| 10 | .394  | 9913-10MM     | V          | 9910-10MM     | V          | 9908-10MM     | V          | 9911-10MM     | V          | 9905-10MM             | V          | 9912-10MM     | V          |
| 11 | .433  | 9913-11MM     | V          | 9910-11MM     | V          | 9908-11MM     | V          | 9911-11MM     | V          | 9905-11MM             | V          | 9912-11MM     | V          |
| 12 | .472  | 9913-12MM     | V          | 9910-12MM     | V          | 9908-12MM     | V          | 9911-12MM     | V          | 9905-12MM             | V          | 9912-12MM     | V          |
| 13 | .512  | 9913-13MM     | V          | 9910-13MM     | V          | 9908-13MM     | V          | 9911-13MM     | V          | 9905-13MM             | V          | 9912-13MM     | V          |
| 14 | .551  | 9913-14MM     | V          | 9910-14MM     | V          | 9908-14MM     | V          | 9911-14MM     | V          | 9905-14MM             | V          | 9912-14MM     | V          |
| 15 | .591  | 9913-15MM     | W          | 9910-15MM     | W          | 9908-15MM     | W          | 9911-15MM     | W          | 9905-15MM             | W          | 9912-15MM     | W          |
| 16 | .630  | 9913-16MM     | W          | 9910-16MM     | W          | 9908-16MM     | W          | 9911-16MM     | W          | 9905-16MM             | W          | 9912-16MM     | W          |
| 17 | .669  | 9913-17MM     | W          | 9910-17MM     | W          | 9908-17MM     | W          | 9911-17MM     | W          | 9905-17MM             | W          | 9912-17MM     | W          |
| 18 | .709  | 9913-18MM     | W          | 9910-18MM     | W          | 9908-18MM     | W          | 9911-18MM     | W          | 9905-18MM             | W          | 9912-18MM     | W          |
| 19 | .748  | 9913-19MM     | W          | 9910-19MM     | W          | 9908-19MM     | W          | 9911-19MM     | W          | 9905-19MM             | W          | 9912-19MM     | W          |
| 20 | .787  | 9913-20MM     | X          | 9910-20MM     | X          | 9908-20MM     | X          | 9911-20MM     | X          | 9905-20MM             | X          | 9912-20MM     | X          |
| 21 | .827  | 9913-21MM     | X          | 9910-21MM     | X          | 9908-21MM     | X          | 9911-21MM     | X          | 9905-21MM             | X          | 9912-21MM     | X          |
| 22 | .886  | 9913-22MM     | X          | 9910-22MM     | X          | 9908-22MM     | X          | 9911-22MM     | X          | 9905-22MM             | X          | 9912-22MM     | X          |
| 23 | .906  | 9913-23MM     | X          | 9910-23MM     | X          | 9908-23MM     | X          | 9911-23MM     | X          | 9905-23MM             | X          | 9912-23MM     | X          |
| 24 | .945  | 9913-24MM     | X          | 9910-24MM     | X          | 9908-24MM     | X          | 9911-24MM     | X          | 9905-24MM             | X          | 9912-24MM     | X          |
| 25 | .984  | 9913-25MM     | X          | 9910-25MM     | X          | 9908-25MM     | X          | 9911-25MM     | X          | 9905-25MM             | X          | 9912-25MM     | X          |
| 26 | 1.024 | 9913-26MM     | X          | 9910-26MM     | X          | 9908-26MM     | X          | 9911-26MM     | X          | 9905-26MM             | X          | 9912-26MM     | X          |

NOTE: MM is used rather than mm for millimeter(s) for computer compatibility.

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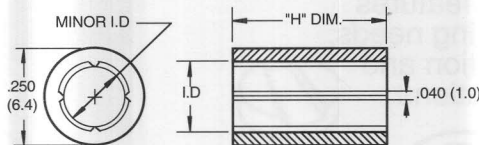
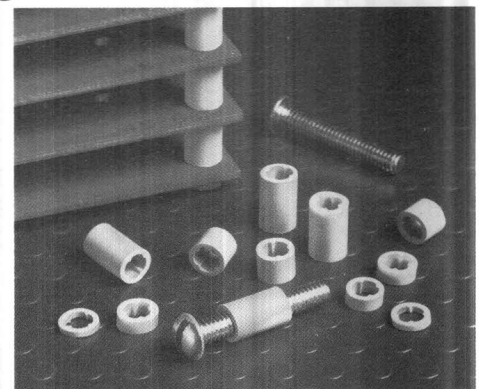
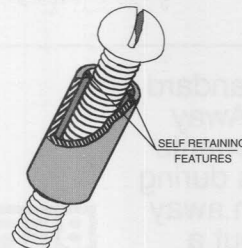
# SCREW SPACERS

- Simple pre-assembly convenience saves handling
- Firm retention assured
- 5 standard sizes in lengths from .030" -1.250"  
(.76-31.8) in .005" (.127) increments
- Made from rigid PVC rated U.L. 94V-0

To answer the problems of extra handling when assembling PCB stacks or for any reasons where spacers will provide even spacing and rigidity, Bivar's SRS Series Self-Retaining Screw Spacers provide a low-cost, quality solution for pre-assembly or faster, easier assembly on the manufacturing floor.

Ribbed inner-wall design assures a snug fit onto #4, #6 and #8 screws, or M3 and M4 metric screws enabling the spacers to remain pre-assembled during handling and assembly. The SRS Series provides a dependable solution for otherwise awkward assembly steps and lost assembly time.

## Self-Retaining PVC Screw Spacers



**Tolerances:** O.D.  $\pm .005$  (.13) I.D.  $\pm .005$  (.13)  
 "H" Dim: .030-.500 (.76-12.7) is  $\pm .005$  (.13)  
 "H" Dim: .505-.750 (12.8-19.1) is  $\pm .008$  (.20)  
 "H" Dim: .755-1.250 (19.2-31.8) is  $\pm .015$  (.38)

| PART NO. | SCREW SIZE | MINOR I.D. | I.D.       | "H" DIM.              |
|----------|------------|------------|------------|-----------------------|
| SRS-1-   | 4          | .107 (2.7) | .142 (3.6) | .030-1.250 (.76-31.8) |
| SRS-2-   | 6 (M 3.5)  | .131 (3.3) | .174 (4.4) | .030-1.250 (.76-31.8) |
| SRS-3-   | 8          | .155 (3.9) | .177 (4.5) | .030-1.250 (.76-31.8) |
| SRS-4-   | M 3        | .113 (2.9) | .144 (3.7) | .030-1.250 (.76-31.8) |
| SRS-5-   | M 4        | .149 (3.9) | .185 (4.7) | .030-1.250 (.76-31.8) |

| "H" DIMENSIONS         | PRICE CODE<br>SRS-1 THRU SRS-5 |
|------------------------|--------------------------------|
| .030-.075 (.76-1.9)    | W                              |
| .080-.150 (2.0-3.8)    | W                              |
| .155-.230 (4.0-5.8)    | X                              |
| .235-.310 (6.0-7.9)    | Y                              |
| .315-.380 (8.0-9.7)    | Z                              |
| .385-.495 (9.8-12.6)   | ZZ                             |
| .500-.750 (12.7-19.1)  | ZZZ                            |
| .755-1.250 (19.2-31.8) | ZZZZ                           |

COLOR: GRAY

### Examples:

SRS-1-050 is price code W SRS-5-410 is price code ZZ  
 SRS-1-240 is price code Y SRS-3-900 is price code ZZZZ

| MM | INCHES | SCREW SIZE #4 | PRICE CODE | SCREW SIZE #6(M 3.5) | PRICE CODE | SCREW SIZE #8 | PRICE CODE | SCREW SIZE #M3 | PRICE CODE | SCREW SIZE #M4 | PRICE CODE |
|----|--------|---------------|------------|----------------------|------------|---------------|------------|----------------|------------|----------------|------------|
| 1  | .039   | SRS-1-1MM     | W          | SRS-2-1MM            | W          | SRS-3-1MM     | W          | SRS-4-1MM      | W          | SRS-5-1MM      | W          |
| 2  | .079   | SRS-1-2MM     | W          | SRS-2-2MM            | W          | SRS-3-2MM     | W          | SRS-4-2MM      | W          | SRS-5-2MM      | W          |
| 3  | .118   | SRS-1-3MM     | W          | SRS-2-3MM            | W          | SRS-3-3MM     | W          | SRS-4-3MM      | W          | SRS-5-3MM      | W          |
| 4  | .158   | SRS-1-4MM     | X          | SRS-2-4MM            | X          | SRS-3-4MM     | X          | SRS-4-4MM      | X          | SRS-5-4MM      | X          |
| 5  | .197   | SRS-1-5MM     | X          | SRS-2-5MM            | X          | SRS-3-5MM     | X          | SRS-4-5MM      | X          | SRS-5-5MM      | X          |
| 6  | .236   | SRS-1-6MM     | Y          | SRS-2-6MM            | Y          | SRS-3-6MM     | Y          | SRS-4-6MM      | Y          | SRS-5-6MM      | Y          |
| 7  | .276   | SRS-1-7MM     | Y          | SRS-2-7MM            | Y          | SRS-3-7MM     | Y          | SRS-4-7MM      | Y          | SRS-5-7MM      | Y          |
| 8  | .315   | SRS-1-8MM     | Z          | SRS-2-8MM            | Z          | SRS-3-8MM     | Z          | SRS-4-8MM      | Z          | SRS-5-8MM      | Z          |
| 9  | .354   | SRS-1-9MM     | Z          | SRS-2-9MM            | Z          | SRS-3-9MM     | Z          | SRS-4-9MM      | Z          | SRS-5-9MM      | Z          |
| 10 | .394   | SRS-1-10MM    | ZZ         | SRS-2-10MM           | ZZ         | SRS-3-10MM    | ZZ         | SRS-4-10MM     | ZZ         | SRS-5-10MM     | ZZ         |
| 11 | .433   | SRS-1-11MM    | ZZ         | SRS-2-11MM           | ZZ         | SRS-3-11MM    | ZZ         | SRS-4-11MM     | ZZ         | SRS-5-11MM     | ZZ         |
| 12 | .472   | SRS-1-12MM    | ZZ         | SRS-2-12MM           | ZZ         | SRS-3-12MM    | ZZ         | SRS-4-12MM     | ZZ         | SRS-5-12MM     | ZZ         |
| 13 | .512   | SRS-1-13MM    | ZZZ        | SRS-2-13MM           | ZZZ        | SRS-3-13MM    | ZZZ        | SRS-4-13MM     | ZZZ        | SRS-5-13MM     | ZZZ        |
| 14 | .551   | SRS-1-14MM    | ZZZ        | SRS-2-14MM           | ZZZ        | SRS-3-14MM    | ZZZ        | SRS-4-14MM     | ZZZ        | SRS-5-14MM     | ZZZ        |
| 15 | .591   | SRS-1-15MM    | ZZZ        | SRS-2-15MM           | ZZZ        | SRS-3-15MM    | ZZZ        | SRS-4-15MM     | ZZZ        | SRS-5-15MM     | ZZZ        |
| 16 | .630   | SRS-1-16MM    | ZZZ        | SRS-2-16MM           | ZZZ        | SRS-3-16MM    | ZZZ        | SRS-4-16MM     | ZZZ        | SRS-5-16MM     | ZZZ        |
| 17 | .669   | SRS-1-17MM    | ZZZ        | SRS-2-17MM           | ZZZ        | SRS-3-17MM    | ZZZ        | SRS-4-17MM     | ZZZ        | SRS-5-17MM     | ZZZ        |
| 18 | .709   | SRS-1-18MM    | ZZZ        | SRS-2-18MM           | ZZZ        | SRS-3-18MM    | ZZZ        | SRS-4-18MM     | ZZZ        | SRS-5-18MM     | ZZZ        |
| 19 | .748   | SRS-1-19MM    | ZZZ        | SRS-2-19MM           | ZZZ        | SRS-3-19MM    | ZZZ        | SRS-4-19MM     | ZZZ        | SRS-5-19MM     | ZZZ        |
| 20 | .787   | SRS-1-20MM    | ZZZZ       | SRS-2-20MM           | ZZZZ       | SRS-3-20MM    | ZZZZ       | SRS-4-20MM     | ZZZZ       | SRS-5-20MM     | ZZZZ       |
| 21 | .827   | SRS-1-21MM    | ZZZZ       | SRS-2-21MM           | ZZZZ       | SRS-3-21MM    | ZZZZ       | SRS-4-21MM     | ZZZZ       | SRS-5-21MM     | ZZZZ       |
| 22 | .886   | SRS-1-22MM    | ZZZZ       | SRS-2-22MM           | ZZZZ       | SRS-3-22MM    | ZZZZ       | SRS-4-22MM     | ZZZZ       | SRS-5-22MM     | ZZZZ       |
| 23 | .906   | SRS-1-23MM    | ZZZZ       | SRS-2-23MM           | ZZZZ       | SRS-3-23MM    | ZZZZ       | SRS-4-23MM     | ZZZZ       | SRS-5-23MM     | ZZZZ       |
| 24 | .945   | SRS-1-24MM    | ZZZZ       | SRS-2-24MM           | ZZZZ       | SRS-3-24MM    | ZZZZ       | SRS-4-24MM     | ZZZZ       | SRS-5-24MM     | ZZZZ       |
| 25 | .984   | SRS-1-25MM    | ZZZZ       | SRS-2-25MM           | ZZZZ       | SRS-3-25MM    | ZZZZ       | SRS-4-25MM     | ZZZZ       | SRS-5-25MM     | ZZZZ       |
| 26 | 1.024  | SRS-1-26MM    | ZZZZ       | SRS-2-26MM           | ZZZZ       | SRS-3-26MM    | ZZZZ       | SRS-4-26MM     | ZZZZ       | SRS-5-26MM     | ZZZZ       |

# Wash-Away Component Mounting Spacers

Available from stock in over 500 standard sizes, these DISS-O-PAD® Wash-Away Spacers accurately position components at desired elevations, protect leads during assembly and soldering, then wash away in hot or warm running water without a trace of residue.

Examine these problem-solving features that will answer your most exacting needs, reducing rework, rejects, inspection and costly replacement. All configurations proven in actual applications.

## Wash Away Your Spacing Problems.

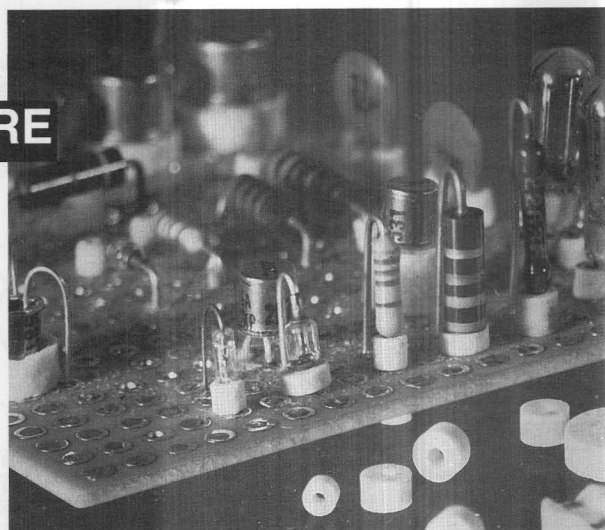


Unique and revolutionary, yet simple to use, DISS-O-PADs are the answer for fast, accurate, economical and easy component locating.

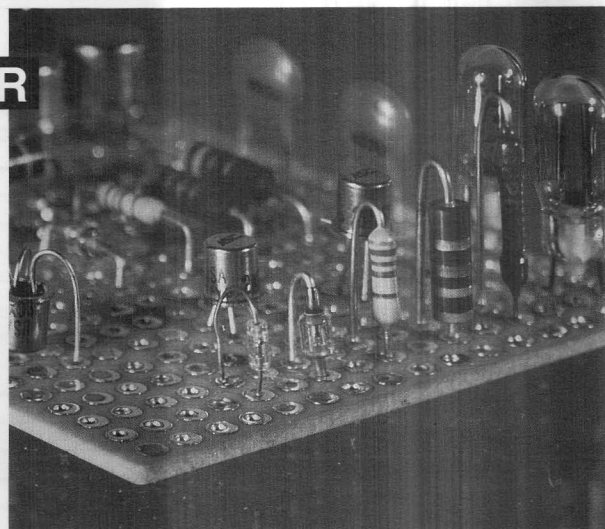
Designed for WAVE, DIP and HAND SOLDERING use, DISS-O-PADs precisely space components then dissolve quickly without a trace of residue.

DISS-O-PADs wash away in WARM or HOT RUNNING WATER, usually within a minute. The hotter the water, the faster they dissolve. The actual dissolving time for any particular DISS-O-PAD is a function of water temperature, force of water steam or spray and the mass and shape of the pad.

**BEFORE**



**AFTER**



## DISS-O-PADs:

### SAFE, EASY TO USE

### INCREASE RELIABILITY

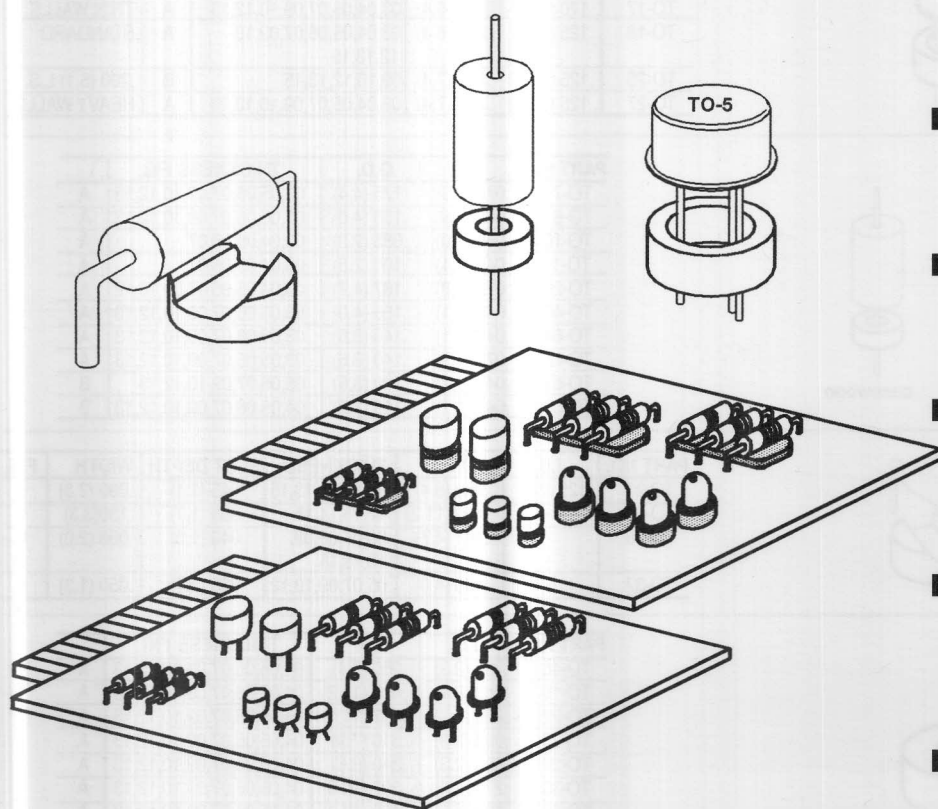
### A Simple, Cost-Effective Solution.

Compounded of organic materials, DISS-O-PADs are noncorrosive, nonconductive, nonallergenic and will not stain or damage your components or boards. Tough enough to withstand normal handling. No threading or critical orientation is required in installation, nor is expensive operator training required.

Ensures controlled uniformity and consistency of spacing in production, provides space for proper filletting and heat dissipation, eliminates lead stresses and strains (particularly at lead origins), improves shock and vibration characteristics, prevents entrapment of moisture and contaminants, eliminates solder bridging, and protects components from thermal shock. No uncontrolled crimping, hand-forming, or nicking of leads.



## Over 500 Sizes in 96 Different Styles and Elevations



### Using DISS-O-PADs Gives You These Added Manufacturing & Inspection Values

- Thermal and Mechanical Protection during handling and soldering cycles, as well as the added safety of elevating "hot" components
- Full Ventilation after washing with just the right amount of space for free air circulation to dissipate heat
- Optimum Filletting by spacing components above the board. Sufficient space is assured for maximum capillary action
- Total Accessibility to leads for inspection, probing, testing, touch-up, and repair and replacement of damaged components
- Uniform Production not only improves total product reliability, but promotes pride of workmanship and customer approval
- Extra Cleanliness with a detergent action in the exact area where most needed

#### REDUCE SCRAP AND REJECTS

Protects components mechanically and thermally, and ensures accessibility of all leads for "touch-up" repair or replacement from component side of board.

#### INEXPENSIVE

A fraction of the initial cost of any other product or method, with the lowest applied or end cost.

#### REDUCE LABOR COSTS

Ready handling and use results in substantial assembly labor savings compared to other methods.

Work simplification and standardization add to savings. Extraordinary savings in the areas of inspection, testing, and repairing occur because of uniform spacing and total lead accessibility.

#### AVAILABILITY

All standard items are shipped from stock or within 3 days. Production quantities of "specials" are shipped within 3 weeks.

#### VERSATILITY

Chances are we have a DISS-O-PAD for your applications. If not, our engineering department will be glad to evaluate and customize a part to meet your needs at a reasonable cost.

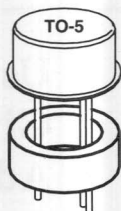


## DISS-O-PAD<sup>®</sup>

### Wash-Away Component & General Purpose Spacers

#### TO-5

.200 (5.1) TYP.  
LEAD SPACING



Standard Tolerances:  $\pm .005"$

| PART NO. | I.D.       | O.D.       | THICKNESS FIG.                   | TO-5 |                 |
|----------|------------|------------|----------------------------------|------|-----------------|
| TO-5     | .225 (5.7) | .375 (9.5) | 03,04,05,06,07,09,10<br>12,13,15 | A    | SPACER          |
| TO-6     | .250 (6.4) | .375 (9.5) | 03,05,06,07,09,10,12,13          | A    | I.C. SPACER     |
| TO-9     | .300 (7.8) | .437 (7.6) | 04,05,07,09,10,12,13,15          | A    | .300 (7.6) L.S. |
| TO-13    | .225 (5.7) | .310 (7.9) | 04,05,06,07,09,10,12,13          | A    | EPOXY CASE      |

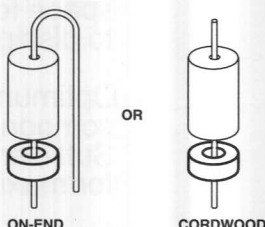
#### TO-18

.100 (2.5) TYP.  
LEAD SPACING



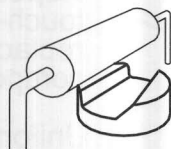
| PART NO. | I.D.       | O.D.       | THICKNESS FIG.                   | TO-5 |                 |
|----------|------------|------------|----------------------------------|------|-----------------|
| TO-12    | .125 (3.2) | .310 (7.9) | 08,09,10,12,13                   | B    | .250 (6.4) L.S. |
| TO-16    | .125 (3.2) | .205 (5.2) | 03,04,05,07,09,10,12,13          | A    | EPOXY CASE      |
| TO-17    | .170 (4.3) | .250 (6.4) | 03,04,05,07,09,10,12,13          | A    | THIN WALLS      |
| TO-18    | .125 (3.2) | .250 (6.4) | 03,04,05,06,07,09,10<br>12,13,15 | A    | STANDARD        |
| TO-20    | .125 (3.2) | .290 (7.4) | 09,10,12,13,15                   | B    | .200 (5.1) L.S. |
| TO-27    | .125 (3.2) | .290 (7.4) | 03,04,05,07,09,10,12,13          | A    | HEAVY WALLS     |

#### ON-END/ CORDWOOD



| PART NO. | I.D.       | O.D.       | THICKNESS FIG.          |   |
|----------|------------|------------|-------------------------|---|
| TO-7     | .075 (1.9) | .175 (4.4) | 03,05,06,07,09,10,12,13 | A |
| TO-8     | .062 (1.6) | .156 (4.0) | 03,05,06,07,09,10,12,13 | A |
| TO-10    | .040 (1.0) | .085 (2.2) | 03,04,05,06,07          | A |
| TO-11    | .045 (1.1) | .100 (2.5) | 03,04,05,06,07          | A |
| TO-26    | .070 (1.8) | .187 (4.7) | 03,04,05,06,07,09,10,12 | A |
| TO-40    | .045 (1.1) | .156 (4.0) | 03,05,06,07,09,10,12,13 | A |
| TO-64    | .045 (1.1) | .140 (3.6) | 03,05,06,07,09,10,12,13 | A |
| TO-65    | .075 (1.9) | .140 (3.6) | 03,05,06,07,09,10,12,13 | A |
| TO-67    | .045 (1.1) | .140 (3.6) | 05,06,07,09,10,12,13    | B |
| TO-68    | .045 (1.1) | .110 (2.8) | 04,05,06,07,09,10,12,13 | B |

#### AXIAL



| PART NO. | I.D.       | O.D.        | THICKNESS                | SLOT DEPTH | WIDTH      | FIG. |
|----------|------------|-------------|--------------------------|------------|------------|------|
| TO-21    | .125 (3.2) | .250 (6.4)  | 09,10,12,13,15           | .045 (1.1) | .090 (2.3) | C    |
| TO-35    | -          | .440 (11.2) | 12,13,14,15              | .065 (1.7) | .130 (3.3) | C    |
| TO-36    | -          | .187 (4.7)  | 06,07,08,09,<br>10,13,15 | .040 (1.0) | .080 (2.0) | C    |
| TO-37    | -          | .156 (4.0)  | 05,07,09,10,12           | .025 (.64) | .050 (1.3) | C    |

#### GENERAL PURPOSE

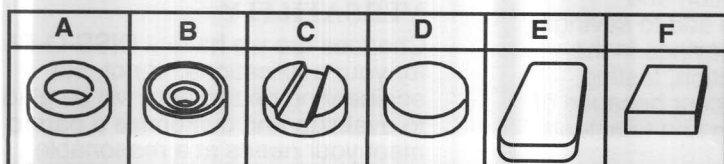


| PART NO. | I.D.       | O.D.        | THICKNESS FIG.          |   |
|----------|------------|-------------|-------------------------|---|
| TO-46    | .090 (2.3) | .250 (6.4)  | 04,05,06,07,09,10,12,13 | A |
| TO-19    | .250 (6.4) | .480 (12.2) | 04,05,06,07,09,10,12,13 | A |
| TO-22    | .225 (5.7) | .437 (11.1) | 04,05,06,07,09,10,12,13 | A |
| TO-23    | .090 (2.3) | .310 (7.9)  | 04,05,06,07,09,10,12,13 | A |
| TO-24    | .090 (2.3) | .340 (8.6)  | 04,05,06,07,09,10,12,13 | A |
| TO-30    | .275 (7.0) | .397 (10.0) | 04,05,06,07,09,10,12,13 | A |
| TO-25    | .180 (4.6) | .480 (12.2) | 04,05,06,07,09,10,12,13 | A |
| TO-28    | .172 (4.4) | .343 (8.7)  | 04,05,06,07,09,10,12,13 | A |
| TO-41    | .156 (4.0) | .360 (9.1)  | 04,05,06,07,09,10,12,13 | A |
| TO-42    | .250 (6.4) | .438 (11.1) | 04,05,06,07,09,10,12,13 | A |

#### SOLID



| PART NO. | I.D. | O.D.       | THICKNESS FIG.          |   |
|----------|------|------------|-------------------------|---|
| TO-29    | -    | .156 (4.0) | 04,05,06,07,09,10,12,13 | D |
| TO-31    | -    | .125 (3.2) | 04,05,06,07,09,10,12,13 | D |
| TO-32    | -    | .187 (4.7) | 04,05,06,07,09,10,12,13 | D |
| TO-33    | -    | .250 (6.4) | 04,05,06,07,09,10,12,13 | D |
| TO-34    | -    | .375 (9.5) | 04,05,06,07,09,10,12,13 | D |

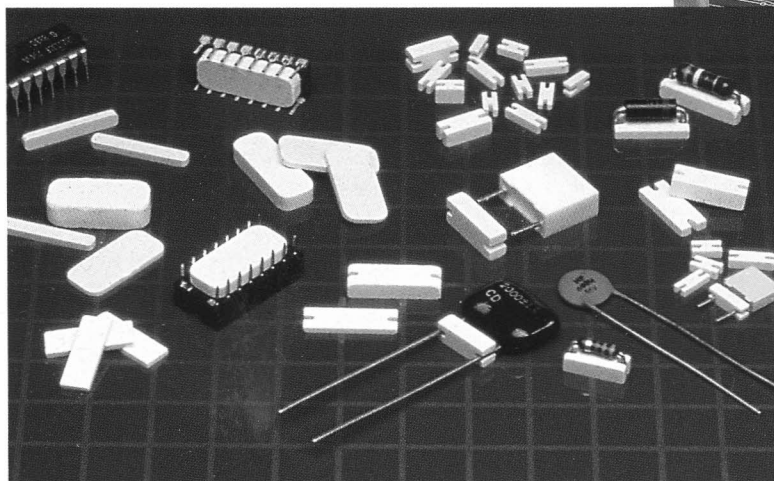
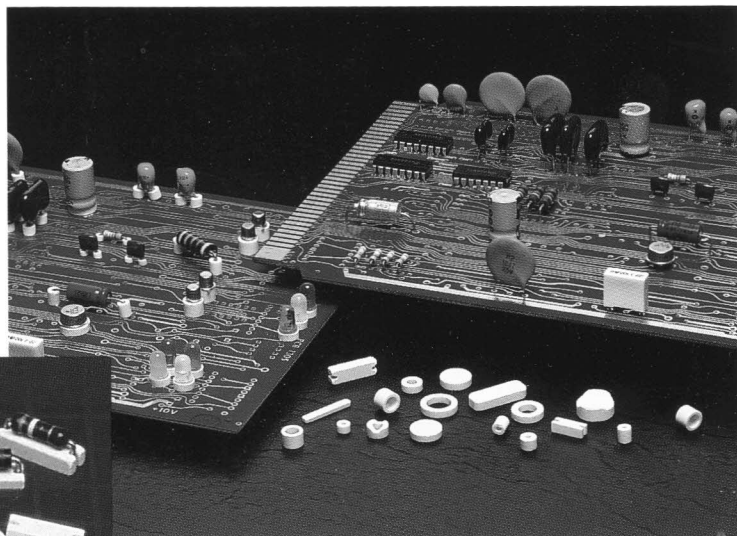


**TO ORDER:** Simply specify PART NUMBER and follow by THICKNESS desired. EXAMPLE: TO-5-07 is the basic, TO-5 part, .070" thick.

FOR HIGHER QUANTITIES OR SPECIAL SHAPES CONSULT FACTORY.

## Wash-Away Rectangular & Square Spacers For DIP, Radial & Axial Devices

- Ideal for all industry-standard DIP, axial and radial mounted devices
- 96 different sizes and elevations
- Properly elevate and protect delicate leads during board handling and assembly.
- Spacers wash away in hot or warm running water



Most DISS-O-PADs® may be ordered in an effervescent version to reduce dissolving time. Add the letter "E" as a suffix, e.g. TO-117-07E. The extra cost is \$3.00/K regardless of quantity.

### RECTANGULAR & SQUARE SPACERS

| PART NO. | L           | W          | THICKNESS                  | FIG. |             |
|----------|-------------|------------|----------------------------|------|-------------|
| TO-100   | .670 (17.0) | .100 (2.5) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-102   | .505 (12.8) | .160 (4.1) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-101   | .562 (14.3) | .185 (4.7) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-116   | .666 (16.9) | .300 (7.6) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-117   | .666 (16.9) | .281 (7.1) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-118   | .705 (17.9) | .260 (6.6) | 04,05,06,07,09,10,12,13,15 | E    | RECTANGULAR |
| TO-120   | .085 (2.2)  | .085 (2.2) | 04,05,06,07,09,10,12       | F    | SQUARE      |
| TO-121   | .095 (2.4)  | .095 (2.4) | 04,05,06,07,09,10,12       | F    | SQUARE      |

TO ORDER: Simply specify PART NUMBER and follow by THICKNESS desired.  
EXAMPLE: TO-117-07 is the basic TO-117 part, .070" (1.8) thick.  
NOTE: TO-XXX, 3 digit base part numbers are slightly higher in price than TO-XX, 2 digit base part numbers.

### RADIAL & AXIAL DEVICE SPACERS

| PART NO. | C/C         | S          | W          | L           | THICKNESS                  |
|----------|-------------|------------|------------|-------------|----------------------------|
| TO-200   | .100 (2.5)  | .035 (.89) | .095 (2.4) | .190 (4.8)  | 04,05,06,07,09,10,12,13,15 |
| TO-201   | .150 (3.8)  | .035 (.89) | .095 (2.4) | .240 (6.1)  | 04,05,06,07,09,10,12,13,15 |
| TO-203   | .200 (5.1)  | .035 (.89) | .095 (2.4) | .290 (7.4)  | 04,05,06,07,09,10,12,13,15 |
| TO-204   | .250 (6.4)  | .040 (1.0) | .145 (3.7) | .340 (8.6)  | 04,05,06,07,09,10,12,13,15 |
| TO-205   | .300 (7.6)  | .040 (1.0) | .145 (3.7) | .390 (9.9)  | 04,05,06,07,09,10,12,13,15 |
| TO-206   | .400 (10.2) | .045 (1.1) | .195 (5.0) | .490 (12.4) | 04,05,06,07,09,10,12,13,15 |
| TO-207   | .500 (12.7) | .045 (1.1) | .195 (5.0) | .590 (15.0) | 04,05,06,07,09,10,12,13,15 |

TO ORDER: Simply specify PART NUMBER and follow by THICKNESS desired.  
EXAMPLE: TO-204-100 is the basic TO-204 part, .100" (2.5) thick.  
NOTE: TO-XXX, 3 digit base part numbers are slightly higher in price than TO-XX, 2 digit base part numbers.

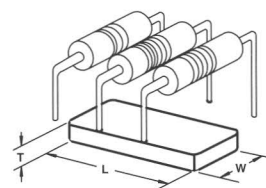
Standard sizes of Bivar DISS-O-PADs® are available from stock.

See complete product specifications and styles available also on page 45.

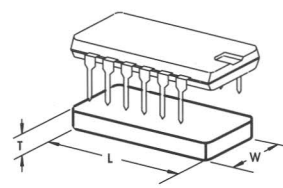
#### THICKNESS CONVERSION CHART:

| NO. | in   | mm    | NO.                      | in   | mm    |
|-----|------|-------|--------------------------|------|-------|
| -03 | .030 | (.76) | -10                      | .100 | (2.5) |
| -04 | .040 | (1.0) | -11                      | .110 | (2.8) |
| -05 | .050 | (1.3) | -12                      | .120 | (3.0) |
| -06 | .060 | (1.5) | -13                      | .130 | (3.3) |
| -07 | .070 | (1.8) | -14                      | .140 | (3.6) |
| -08 | .080 | (2.0) | -15                      | .150 | (3.8) |
| -09 | .090 | (2.3) | TOLERANCES: ± .005 (.13) |      |       |

#### UNSLOTTED APPLICATIONS

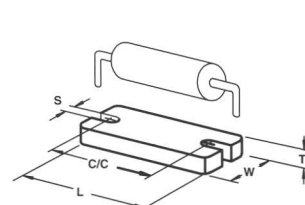


AXIAL LEAD MOUNT

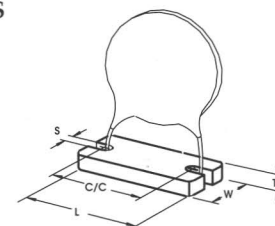


DIP MOUNT

#### SLOTTED APPLICATIONS



AXIAL LEAD MOUNT



RADIAL LEAD MOUNT





# Electronic Assembly Hardware

Snap-In Card Guides  
Flame Retardant Guides  
Deep Channel Guides  
PCMCIA Card Guides  
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Narrow Card Guides  
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Inserters & Extractors  
Card Ejectors & Handles  
PCB Retainers  
Connector Cutout Covers  
Extruded LED Mounts  
Rectangular LED Mounts  
Individual T-1 3/4 LED Mounts  
Individual T-1 LED Mounts  
Individual T-1 & T-1 3/4 LED Mounts  
LED Strip Mounts  
Molded LED Mounts  
Individual LED Holders  
Panel Clips & Rings  
SIP & DIP Mounts  
Discrete Capacitor Mounts  
Vertical Component Mounts  
Universal TO-5, TO-18 & T-1 3/4 LED Mounts  
TO-18 Mounts, TO-18 Spreaders  
TO-5 & IC Mounts  
IC Mounts & Spreaders  
Power Transistor Mounts  
Electrolytic Capacitor Mounts  
Universal Discrete Spacers  
Crystal Mounts & Insulators  
PCB Hole Plugs  
Standard Nylon Screw Spacers  
Self-Retaining Screw Spacers  
General Purpose, Axial & Universal Wash-Away Spacers  
Rectangular & Square Wash-Away Spacers

*CID A-A55485 &  
MIL-M-38527 Products*



## History

Founded in 1965, incorporated in 1966, Bivar is a privately held corporation. Located in the Spectrum industrial complex in Irvine, California, where all marketing, manufacturing and warehousing are centralized.

The concept of immediate service has made Bivar a company that customers and distributors identify as among the most desirable to work with.

Bivar products are stocked in-depth throughout the U.S. by a network of authorized distributors for immediate delivery and backed by several million dollars of central inventory. Bivar has accented its international marketing activities, establishing a rapidly growing network of distributors throughout Europe, Asia and the Far East.

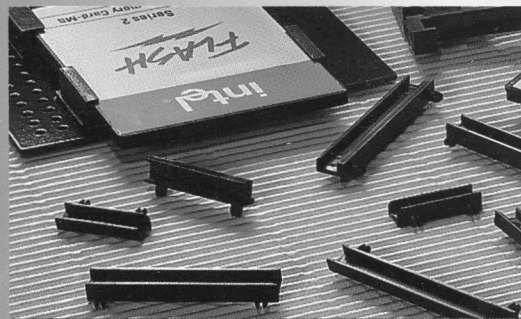
## Mission

Bivar designs, manufactures and markets over 10,000 products, each designed to solve a unique problem associated with printed circuit board assembly and packaging of the PCB itself, or making emerging board-level technologies such as packaging IC cards easier, simpler to accomplish. Over the years, the company's response to a specific application has yielded this family of low-cost solutions, which now comprises industry's largest selection of devices expressly made for use with the most popular components. In packaging hardware, Bivar products facilitate the positioning,

access and identification of PCBs. Moreover, these products provide economical answers to many expressed needs by designers and those involved in assembly when quality and uniformity are key concerns.

## Markets

Computers and computer peripherals, instrumentation, telecommunications, aerospace, commercial and industrial electronic applications and emerging consumer products are the most significant markets where Bivar products are used. Ultimately, the value of Bivar's product has become known to designers seeking to avoid problems



they know will occur in the PCB assembly process. The early consideration of their use by the designer almost immediately realizes cost savings, makes assembly and inspection easier, and improves the appearance of the assembly itself. A second, newly emerging market that is believed ideal for these devices is contract manufacturing. For design, quality control, manufacturing and purchasing, Bivar products offer appealing benefits for each.

BIVAR, INC. 4 THOMAS, IRVINE, CALIFORNIA 92718  
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